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—*Dickens.*

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SURGICAL PATHOLOGY OF THE URINARY TRACT IN INFANTS

BASED ON A REVIEW OF FOUR THOUSAND NINE HUNDRED AND THREE NECROPSIES *

HENRY G. BUGBEE, M.D.
AND
MARTHA WOLLSTEIN, M.D.
NEW YORK

In the study of the urinary tract in infants, made possible through the perfection of small caliber cystoscopes, the roentgen rays and functional kidney tests, a true underlying lesion has so often been demonstrated as the real cause for the symptoms presented that a study of 4,903 cases coming to necropsy at the Babies' Hospital, New York, has been undertaken in hope that more accurate data might be obtained on the incidence of malformations and the relationship of such anomalies to the general pathology and symptoms presented, as well as their bearing on infant mortality.

Little has been presented dealing with anomalies in children only. Anomalies have been studied principally in adults, and numerous contributions to the literature have been made during the last few years. Such malformations have been discovered in the course of a complete urologic examination, owing largely to perfection of technic in urologic diagnosis. The reason for such investigation has most often been an infection of the urinary tract. Duplication of the ureter and kidney pelvis has been the most frequent anomaly found in adults, while anomalies resulting in hydronephrosis and pyonephrosis have been more rare. The opposite is found to be true in the cystoscopic examination of children as well as in those coming to necropsy. Duplication apparently causes little trouble in early life, although fewer children than adults undergo thorough urologic examinations and thus they may not be discovered so often in children, while lesions giving rise to hydronephrosis and pyonephrosis are not uncommon in infants and often result fatally during the early weeks or months of life.

SINGLE KIDNEY

We have demonstrated the presence of a single kidney in four adults. One presented a tuberculous lesion in the one kidney; the second, a pyonephrosis; the third, a calculous obstruction in the single ureter, and the fourth, calcareous mesenteric glands in the region of the absent kidney.

* Read before the Section on Urology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

* Owing to lack of space, this article is abbreviated here by the omission of illustrations and tables. The complete article appears in the Transactions of the Section and in the authors' reprints.

While this anomaly is rare (estimated at one in 2,650 cases), its importance is apparent and its possibility must be borne in mind.

FUSED KIDNEY

There were three cases of fused kidney, two of which presented other anomalies. Two of these patients died of bronchopneumonia, and the third of status thymolymphaticus.

The importance of this lesion lies in the distortion often present in the kidney, which leads to poor drainage, with its greater susceptibility to infection; also the danger of its removal before demonstrating the absence of a kidney on the opposite side.

TABLE 1.—*Lesions Found in Series of Necropsies*

KIDNEY LESIONS	Number
Single kidney	1
Fused kidney	3
Double ureter	1
Renal displacement	6
a. No lesion (2 pelvic)	4
b. With cleft ureter	1
c. Movable or floating	1
Redundance of kidney substance	5
Rudimentary kidney	5
a. Not cystic	1
b. Cystic	4
Polycystic kidney	15
Monocystic kidney	2
Cystic kidney with hydronephrosis	3
Horseshoe kidney (1 sigmoid)	10
Nephrolithiasis	13
a. No dilatation of pelvis	10
b. Dilatation of pelvis	3
Pyonephrosis	9
a. Single	3
b. Double	6
Hydronephrosis	44
a. Single	19
b. Double	25
	117

OTHER MALFORMATIONS IN THESE 117 CASES	
Spina bifida	2
Double clubfoot	1
Depression of sternum	1
Cardiac malformation	5
Laryngeal malformation	1
Esophageal stenosis	2
Pyloric stenosis	2
Imperforate anus	3
Inguinal hernia	3
Exstrophy of bladder and epispadias	1
Hypospadias	1
Atresia of vagina, vesicovaginal fistula	1
Bicornate uterus, double vagina, right ureter opened into vagina	1
	24

OTHER ABNORMAL CONDITIONS	
Mongolion idiocy	2
Mental defective	1
Birth palsy due to meningeal hemorrhage	1
Status thymolymphaticus	2
Congenital syphilis	5
	11

117 CASES		
Male	82	
Female	35	
	117	
Side Involved:		
Right	28	
Left	27	
Both	61	
		116
Not stated	1	
		117

AGE: 6 HOURS TO 5 YEARS		
Under 1 month	16	
1 to 3 months	31	47 under 3 months
3 to 6 months	22	69 under 6 months
6 to 12 months	32	101 under 1 year
1 to 2 years	10	
Over 2 years	5	
Not stated	1	

RENAL DISPLACEMENT

Only a pronounced displacement of the kidney can be demonstrated at necropsy. Two cases presented a pelvic kidney with incomplete rotation, and in two

TABLE 2.—*Single Kidney; Fused Kidney; Double Ureter*

Case	Age	Sex*	Chief Complaint	Duration	Cause of Death	Kidney Findings at Necropsy	Other Malformations
					SINGLE KIDNEY		
1	13 weeks	♂	Vomiting	11 weeks	Marasmus	Absence of left kidney; right weighed 30 gm.	Pyloric stenosis
					FUSED KIDNEY, THREE CASES		
2	11 months	♀	Cough and fever	122 days	Bronchopneumonia	Kidneys fused at upper poles	Spina bifida
3	16 months	♂	Cough and fever	1 month	Bronchopneumonia	Left kidney absent; right fused	
4	18 days	♂	Deformity of feet	13 days	Status thymolymphaticus	Fused right kidney; branched ureter; double pelvis; no left ureteral opening into bladder	Double club feet
					DOUBLE URETER		
5	8 months	♂	Cough and fever	22 days	Bronchopneumonia	Right normal; left two fused kidneys with the ureters entering bladder separately	

* In this column, ♂ indicates male; ♀, female.

TABLE 3.—*Renal Displacement*

Case	Age	Sex	Chief Complaint	Duration	Cause of Death	Kidney Findings at Necropsy	Other Malformations
					A. NO LESION, SIX CASES		
6	11 days	♀	Vomiting	11 days	Congenital stenosis of esophagus	Left pelvic kidney; right kidney normal	Esophageal stenosis
7	8 months	♂	Cough and fever	5 weeks	Bronchopneumonia	Right kidney enlarged and displaced downward and to median line	
8	5 months, 3 weeks	♂	Diarrhea	.....	Enterocolitis	Left pelvic kidney with pelvis anteriorly; right kidney normal	
9	3 years	♂	Loss of weight	1 yr., 1 mo.	Miliary tuberculosis	Left kidney lay on vertebral column and was smaller than right	
					B. WITH CLEFT URETER		
10	1 month, 8 days	♂	Loss of weight	1 month	Staphylococcus septicemia	Both kidneys very low; right hydroureter; left kidney small; pyonephrosis	
					C. MOVABLE OR FLOATING		
11	12 days	♂	Loud breathing	12 days	Congenital malformation of heart	Floating right kidney; freely movable, could be turned over to touch left; left normal	Congenital malformation of heart

TABLE 4.—*Redundancy of Pyramids and Papillae*

Case	Age	Sex	Chief Complaint	Duration	Cause of Death	Kidney Findings at Necropsy	Other Malformations
					FIVE CASES		
12	6 months	♀	Loss of weight	5 weeks	Marasmus	Anomalous redundance of renal cortex and medulla; ten pyramids present; right kidney normal	
13	2 months	♀	Loss of weight and diarrhea	2 months	Marasmus	Anomalous distribution of kidney cortex and medulla; ten pyramids; right kidney normal	
14	8 months	♀	Diarrhea	10 days	Bronchopneumonia	Redundance of left kidney; substance as in first case above	
15	6 mo., 2 wk.	♂	Diarrhea and vomiting	3 weeks	Intestinal intoxication and indigestion	Redundance of right kidney tissue; nine pyramids	Status thymolymphaticus
16	10 months	♂	Vomiting, cough	7 days	Vomiting, cough and fever; status thymolymphaticus	Redundance of right kidney tissue; nine pyramids	Status thymolymphaticus

TABLE 5.—*Rudimentary Kidney*

Case	Age	Sex	Chief Complaint	Duration	Cause of Death	Kidney Findings at Necropsy	Other Malformations
					A. NONCYSTIC, FOUR CASES		
17	9 weeks	♂	Failure to gain; vomiting; loose stools	4 weeks	Prematurity	Rudimentary kidney, left, measured 2 by 1 cm.; markings good; ureter normal; right kidney normal	
					B. CYSTIC		
18	11 months	♂	Wasting and diarrhea	10 weeks	Enterocolitis	Rudimentary left kidney, 2 by 0.5 by 0.8 cm.; rudimentary ureter, 3 cm. long, lost in perirenal fat; small renal artery; right kidney normal, weighed 25 gm.	
19	9 months	♀	Prolapse of rectum	4 weeks	Malnutrition	Right kidney measured 2.5 by 4 cm. with little renal tissue; its ureter opened into vagina; left kidney in malposition	
20	7 months	♀	Choking; blue spells; vomiting; convulsions	7 months	Malformation of larynx	Right kidney, 3.5 cm. long by 1 cm. wide, buried in fat; thin shell around small pelvis and ureter, which was pervious, but small; left kidney normal	Congenital malformation of larynx
21	6 days	♂	Imperforate anus	6 days	Imperforate anus	Right kidney measured 3 by 1.5 cm.; no kidney substance; right kidney enlarged	Congenital dilatation of rectum and imperforate anus

others a kidney was found lying on the vertebral column at the pelvic brim. A fifth, presenting two low kidneys, showed a hydronephrosis in one and pyonephrosis in the opposite kidney, a general septicemia, secondary to the kidney infection, causing death. The sixth case showed a true floating right kidney. Two of these cases presented other anomalies which were the cause of death.

Many movable kidneys are acquired in later life, but true congenital displacement and mobility does exist. Its possibility in an infant must be recognized in diagnosing an abdominal tumor, and its susceptibility to hydronephrosis and infection borne in mind.

REDUNDANCE OF PYRAMIDS AND PAPILLAE

A pronounced redundance of kidney tissue was apparent in five cases, the opposite kidney in each instance being normal. The enlarged organ presented nine or ten pyramids, and the kidney pelvis was diminished in size.

Two of these cases presented the condition of status thymolymphaticus.

TABLE 6.—*Congenital Polycystic Kidneys*

Case	Age	Sex	Chief Complaint	Duration	Cause of Death	Kidney Findings at Necropsy	Other Malformations
A. SMALL CYSTS, FIFTEEN CASES							
22	7½ months	♂	Diarrhea	1 week	Gastro-enteritis	Cystic kidney, right only	
23	5 months	♂	Wasting	11 weeks	Marasmus	Left kidney had numerous cysts in the cortex and was larger than the right normal kidney	
24	19 months	♀	Cough and fever	10 weeks	Pulmonary tuberculosis	Many small cysts in the cortex of both kidneys	
25	9 months	♀	Vomiting and drowsiness	3 weeks	Tuberculous meningitis	Right kidney showed many cysts; left kidney normal	
26	5½ months	♂	Failure to gain	5 months	Secondary broncho-pneumonia	Small cysts in cortex of both kidneys	
27	8 weeks	♂	Loss of weight	1 week	Marasmus	Many small cysts in the cortex of both kidneys	
28	5 years	♀	Fever	1 week	Tuberculous meningitis	Small cysts in the cortex of both kidneys	
29	16 months	♀	Drowsiness	3 days	Tuberculous meningitis	Two cysts in cortex of right kidney	
30	1½ months	♂	Vomiting and loss of weight	1½ months	Marasmus	Right congenital cystic kidney; many small cysts and one large cyst	Patent ductus arteriosus and foramen ovale
31	1 year	♀	Diarrhea and failure to gain	1 year	Acute gastro-enteritis	Kidneys smaller than normal; many cysts in cortex of both	
32	1 month	♀	Swollen elbow and shoulder	1 week	Prematurity	Multiple pin-head sized cysts in the cortex of both kidneys	
33	3 months	♂	Loss of weight and vomiting	1 week	Marasmus	Multiple cysts, pin-head sized, in cortex of both kidneys	
34	3½ months	♂	Vomiting and diarrhea	3 days	Congenital cystic kidneys	Many small cysts in cortex and medulla of both kidneys	Double congenital inguinal hernia
35	6 hours	♂	Prematurity	.....	Prematurity	Many cysts in both kidneys	Patent ductus arteriosus and foramen ovale
36	4 months	♂	Cough, diarrhea and vomiting	2 weeks	Acute bronchopneumonia	Pin-head sized cysts in both kidneys	
B. LARGE CYSTS							
37	1½ years	♂	Cough and fever	10 weeks	Chronic bronchopneumonia	Congenital multilocular cyst of left kidney and atrophy of kidney substance; compensatory hypertrophy of right kidney	
38	9 months	♂	Loss of weight, vomiting and cough	2 months	Secondary broncho-pneumonia	Four small cysts in right kidney; left kidney a cystic mass	
C. CYSTS AND HYDRONEPHROSIS							
39	3½ months	♂	Diarrhea, vomiting and fever	6 weeks	Gastro-enteritis	Right kidney normal; left upper half normal; lower smaller half, cystic	
40	7 weeks	♂	Retention of urine	.....	Suppurative peritonitis	Multiple cysts in left kidney cortex and medulla, which was larger than right	
41	4 months	♂	Vomiting and marasmus	2 months	Marasmus and birth injury	Right kidney, upper pole several cysts, surrounded by compressed kidney tissue; left kidney less so	

TABLE 7.—*Horseshoe Kidney*

Case	Age	Sex	Chief Complaint	Duration	Cause of Death	Kidney Findings at Necropsy	Other Malformations
TEN CASES							
42	6 weeks	♂	Swelling of legs	6 weeks	Marasmus	Horseshoe kidney; union at lower poles	
43	3 mo., 3 wk.	♀	Cough	5 weeks	Marasmus	Horseshoe kidney; union at lower poles	
44	1½ years	♀	Thin stools	3 months	Malnutrition	Horseshoe kidney united at lower poles; ureters slightly dilated	
45	10 weeks	♂	Loss of weight	10 weeks	Congenital syphilis	Horseshoe kidney; union at lower poles	
46	2½ years	♂	Large head	6 months	Cerebral tumor	Horseshoe kidney; dilatation of ureters and kidney pelves	
47	9 days	♂	Vomiting, scanty stools	9 days	Congenital atresia of esophagus	Horseshoe kidney dilatation of ureters and kidney pelves	Atresia of esophagus
48	1 yr., 5 wk.	♀	Enlargement of abdomen	6 months	Congenital hydronephrosis	Horseshoe kidney; union at upper poles; lay in left flank and left kidney the larger; pelvis and calices of right dilated; 16 oz. of clear fluid removed; apparently one large pelvis for both (sigmoid kidney)	
49	3 months	♀	Bleeding from ulcers on skin	2 weeks	Pyemia	Horseshoe kidney united at lower poles	
50	2 years	♀	Cough and fever	.....	Bronchopneumonia	Horseshoe kidney; union at lower poles	
51	14 days	♀	Spina bifida	.....	Meningitis and hydrocephalus	Horseshoe kidney; union at lower poles; left twice size of right; ureters normal; uric acid infarcts	Spina bifida; right inguinal hernia

RUDIMENTARY KIDNEY

While one kidney may become atrophied later in life, most often because of an atrophic pyelonephritis or ureteral occlusion, a true rudimentary kidney is found as a congenital malformation as in these five cases. In

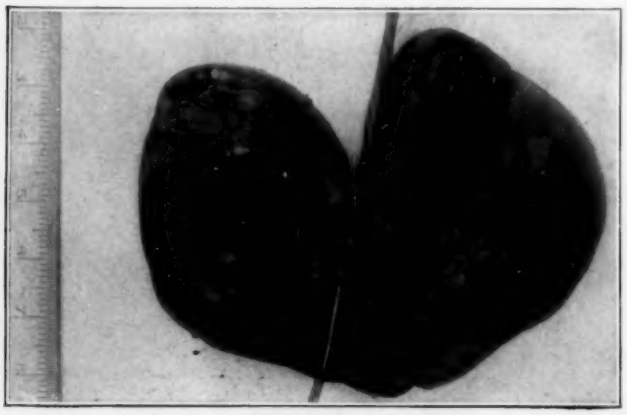

Fig. 1.—Redundance of tissue.

all but one case the opposite kidney was normal. Two cases presented other malformations.

The importance of recognizing the presence of a rudimentary kidney is apparent in contemplating surgery on its fellow, and shows the need of functional kidney tests and pyelography.

CONGENITAL POLYCYSTIC KIDNEYS

Polycystic kidney has long been considered congenital and believed to be due to a failure of the uriniferous tubules and the terminal collecting tubules to unite.

In four of the polycystic kidney cases, one kidney was apparently normal, while the others were bilateral. In later life, when one kidney has been removed for this condition, the opposite kidney has rapidly become cystic.

Three of the fifteen cases presented other congenital lesions; only two of the fifteen children were a year old. The cause of death was attributed directly to the kidney lesion in but one case.

Polycystic kidneys often acquire large size and readily become the seat of infection, owing to poor drainage of the cyst cavities; and their low kidney function may lead to a train of symptoms difficult to differentiate from an interstitial nephritis.

Two cases presented a large cyst in one kidney, one with polycystic disease in its fellow, the other presenting a diffuse nephritis in the opposite kidney.

Three cases showed a coexisting hydronephrosis; one was unilateral with no apparent obstruction at the outlet of a dilated ureter; the other two were bilateral, one with no apparent obstruction below, the second presenting a definitely hypertrophied verumontanum and urinary retention.

HORSESHOE KIDNEY

Of the ten cases of horseshoe kidney, in nine there was a union between the lower poles and in but one instance at the upper poles. Four showed ureteral dilatation, and one patient died from uremia. Two showed other anomalies.

This type of kidney often presents an easily palpable abdominal mass and, from its abnormal position, often anomalous vessels and ureteral distribution, is subject to pressure and poor drainage and is more prone to pathologic lesions.

NEPHROLITHIASIS

As calculi were found in the kidneys of thirteen infants, all with one exception under a year old and one in a child of 11 days, the supposition is that calculi may form in the fetus and that faulty metabolism and the presence of infection in the mother may be the underlying cause.

TABLE 8.—*Nephrolithiasis*

Case	Age	Sex	Chief Complaint	Duration	Cause of Death	Kidney Findings at Necropsy
A. No Dilatation of Pelvis, Thirteen Cases						
52	6 months	♂	Diarrhea and vomiting	2 weeks	Acute gastro-intestinal intoxication	Calculi in both kidneys as large as shot
53	3 months	♀	Loss of weight, diarrhea and vomiting	2 weeks	Acute enterocolitis	Three calculi in left kidney, 3.5 by 8 mm. in diameter
54	9 months	♂	Diarrhea and vomiting	1 month	Secondary broncho-pneumonia	One stone, 4 mm. in diameter, in pelvis of right kidney
55	9 months	♂	Diarrhea and vomiting	5 weeks	Diarrhea, vomiting	One calculus in pelves of right kidney
56	1 yr., 3 mo.	♂	Cough and loss of weight	2 weeks	Secondary broncho-pneumonia	Several small calculi in right ureter
57	4 months	♀	Vomiting, cough and diarrhea	1 month	Acute gastro-enteritis	One uric acid calculus in right kidney
58	5 months	♂	Diarrhea, fever, vomiting	2 days	Acute intestinal intoxication	Many small calculi in both kidneys
59	8 months	♂	Vomiting	16 days	Acute intestinal intoxication	Renal calculus in right kidney, 2 mm. in diameter
60	6 months	♂	Cough and loss of weight	5 days	Acute bronchopneumonia	One calculus in left kidney, 2 mm. in diameter
61	11 months	♀	Cough and fever	2 weeks	Bronchopneumonia	Two stones in right kidney, 2 and 3 mm. in diameter
62	11 days	♂	Cough and fever	.....	Bronchopneumonia	Small calculi in both kidneys
B. Dilatation of Pelvis						
63	6 months	♂	Vomiting	2 mo., 1 wk.	Diphtheria	Multiple stones in kidneys; 3 in right, 2 in left, 1 in ureter
64	5 months	♀	Prostration; vomiting	1 day	Marasmus	Uric acid calculus in the pelvis of the right kidney

TABLE 9.—*Causes of Hydronephrosis*

Double		Single	
Phimosis	1	Atresia of ureter	1
Hypertrophy of verumontanum	8	Constriction of ureter	3
Constriction of both ureters	1	Cleft ureter	1
Epispadias and exstrophy of bladder	1	Double ureter	1
Transverse fold of bladder mucosa	4	Imperforate anus	1
No urethral opening; malformation of uterus and vagina	1	Compression by large colon	2
Imperforate anus, distended rectum	1	Stone in pelvis	1
No cause	6	Fold of mucosa over ureteral opening	5
Stones in both pelves	1	Malformation	1
Birth palsy, paralysis of bladder	1	No cause	3
	25		19

All of these infants harbored an infection, and all but three showed a severe grade of gastro-enteritis.

The fact that so many calculi were found in infants a few months old shows that calculi may be present from birth, and it is fair to assume that they are more common in infants than has been generally supposed, many indefinite colics possibly being due to this cause.

Thomas and Tanner collected, in 1922, reports of 203 cases of calculi in children to 15 years of age. The average age was 7.8 years. In 112, the stones were discovered with the roentgen ray.

PYONEPHROSIS

In these nine cases only two were unilateral. In one, the kidney lesion was secondary to an impacted ureteral calculus, and in the second was caused by a stricture of the ureter. Four of these cases died of sepsis within a few weeks of birth. Two presented other anomalies.

The primary cause of obstruction with secondary dilatation of the upper urinary tract was due in two cases to a very much enlarged verumontanum blocking the posterior urethra. We[1] have reported this condition. It had not previously been recorded, and was the cause of obstruction in ten cases reported in this paper.

HYDRONEPHROSIS

The largest series of cases was that of hydronephrosis. It will be noted (Table 11) that less than one third of these infants lived over six months.

Valve formations of mucous membrane forming an obstruction to the outflow of urine from one ureter or from the bladder was the most common cause of the hydronephroses; hypertrophy of the verumontanum the next most common etiologic factor. The number of accompanying anomalies is worthy of note.

this must be accepted as probably true of several of the nine cases.

While spina bifida occulta was observed as an additional lesion in two of these cases, it has been found to be the underlying cause of urinary retention with superimposed infection in fourteen cases in the living. Many of the necropsy lesions here enumerated have been observed in the living child by means of cystoscopic investigation, roentgenograms or at operation. The records given here are only of postmortem examinations. How many children harbor congenital anomalies of the urinary tract is a question worthy of careful consideration.

Fig. 2 (Case 3).—Fused kidney with branched ureter.

TABLE 10.—*Pyonephrosis*

NINE CASES

Case	Age	Sex	Chief Complaint	Duration	Cause of Death	Kidney Findings at Necropsy	Other Malformations
65	11 months	♂	Diarrhea	2 months	Catarrhal colitis	Left abscessed kidney had dilated pelvis and tortuous ureter, with stricture at lower end; right kidney normal	
66	1 year	♀	Cough; loss of weight; edema of ankles	2 months	Bronchopneumonia	Right pyonephrosis due to calculous obstruction of ureter	
67	40 days	♀	Distended abdomen, cough, icterus and vomiting	4 days	Sepsis	Distended kidney pelves; abscesses in kidney substance; ureters dilated from pressure of dilated vagina	Atresia of vagina; vesicovaginal fistula
68	14 days	♂	Redness and edema of abdomen	5 days	Sepsis	Both pelves and ureters dilated; turbid urine present	
69	9 months	♂	Vomiting and fever	2 months	Enterocolitis	Ureters and pelves extremely dilated; ureteral openings patent but small	Hyperplasia of thymus
70	1 month	♂	Vomiting; green stools; refused food; convulsions	1 week	Sepsis of new-born	Right cortex and medulla seat of suppurative inflammation; calices dilated and contained a fibrinous thrombus projecting into ureter and obstructing it	
71	5 weeks	♂	Icterus; swollen abdomen	2 weeks	Sepsis of new-born	Right ureter dilated into funnel shape just below pelvis; normal from there; left kidney, 14.5 by 6 cm.; multilocular bag of pus	
72	3½ years	♂	Cough	10 days	Bronchitis	Both ureters dilated and tortuous; urethra blocked by enlarged verumontanum; urethral openings larger than normal; pelves dilated and contained pus	
73	1 month	♂	Icterus; swollen abdomen	1 month	Streptococcus meningitis	Both ureters and pelves dilated and tortuous; walls of bladder hypertrophied; enlarged verumontanum	

No cause is attributed for the hydronephrosis in nine cases. A valve formation of mucous membrane or constriction of the ureteral or vesical orifice may be easily overlooked at necropsy in the small infant, and

A report by Clarke, Lowsley and Kingery[2] of 4,215 necropsies, mostly on adults (from 20 to 50 years of age), showed sixty-two anomalies, an incidence of 1.47

1. Bugbee, H. G., and Wollstein, Martha: J. Urol. **10**: 477 (Dec.) 1923.

2. Lowsley, O. S.; Kingery, L. B., and Clarke, H. C.: The Surgical Significance of Certain Abnormalities of the Urinary Tract, J. Urol. **11**: 293 (March) 1924.

per cent. The statement made by those writers that such anomalies had probably not shortened life would be at variance with our study of infants. As the vast majority of infants dying outside a hospital do not come to necropsy, the incidence of anomalies of the urinary tract in children is probably much more com-

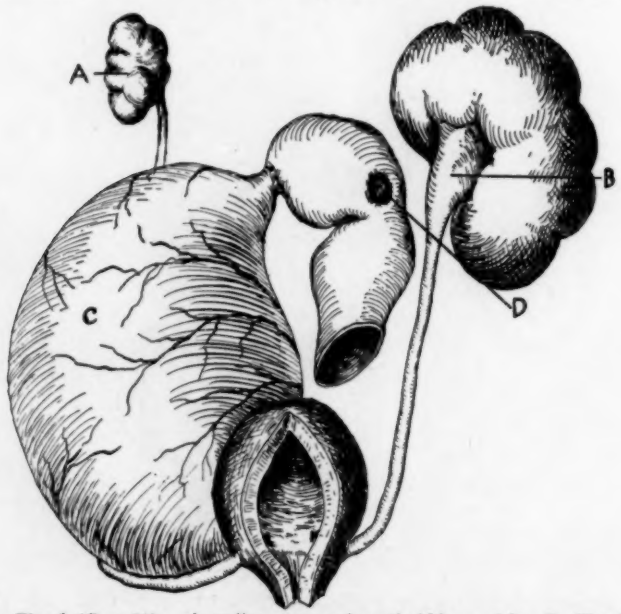

Fig. 5 (Case 21).—*A*, rudimentary, polycystic kidney, right; *B*, dilated pelvis of left kidney; *C*, dilated rectum, imperforate; *D*, artificial anus.

mon than is here shown (2.3 per cent.) and are, we believe, often the underlying cause for superimposed infections and result in many mortalities occurring in the first few years of life.

This brief summary of cases, we believe, gives some idea of their frequency and the variety of lesions found, and should impress on us the necessity of a thorough

Fig. 7 (Case 37).—Large multilocular cyst of left kidney.

investigation (now quite possible) of all infants, regardless of age, that present an indefinite abdominal tumor, obscure abdominal colics, a disturbance of urinary function, hematuria or persistent pyuria.

40 East Forty-First Street.

ABSTRACT OF DISCUSSION

DR. DANIEL N. EISENDRATH, Chicago: Dr. Bugbee deserves a great deal of credit for his perseverance in calling the attention of urologists to the clinical importance of anomalies. They are of importance, not alone in children, but because of their persistence into adult life. I beg to differ with Dr. Bugbee in his use of the word "fused." I have been trying to insist on our being a little more accurate in nomenclature. The word "fused" is just as applicable to horseshoe or double kidney. Instead of using the term reduplication of the ureters, I think we should speak of "double kidney." I believe we should drop the term "fused kidney" altogether. For example, there is the crossed ectopic kidney, in which one has crossed and fused with the kidney of the other side. Then we have the cake kidney in which two halves of a horseshoe kidney have fused along their mesial borders. As to the frequency of pyonephrosis and hydronephrosis following congenital stricture of the ureter: There are certain points of predilection for these to form, the first near the ureteropelvic junction, next where the ureter crosses the iliac vessels and last just before it reaches the bladder. Many of the children having strictures are being treated year in and

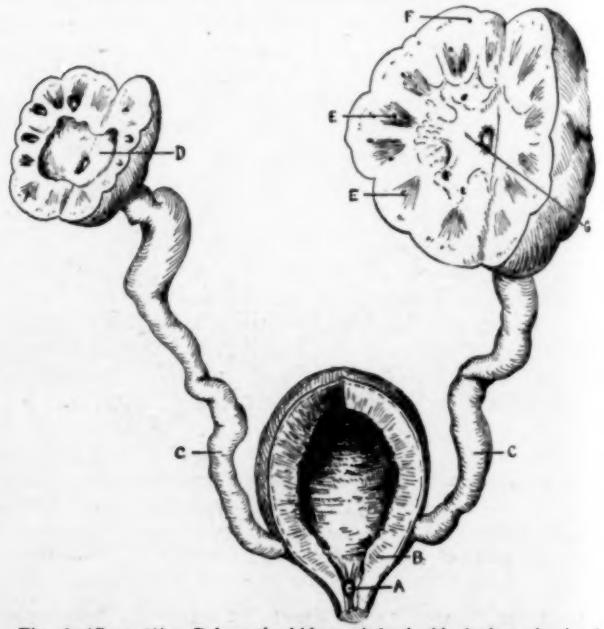

Fig. 9 (Case 40).—Polycystic kidney, left double hydronephrosis: *A*, enlarged verumontanum; *B*, hypertrophied bladder wall; *C*, dilated ureters; *D*, dilated pelvis, right kidney; *E*, *E*, cysts in medulla of left kidney; *F*, cysts in cortex of left kidney; *G*, dilated pelvis, left kidney.

year out for pyelitis, but if they are examined by means of a ureterogram and bougies, strictures of the ureter will be found, which will never get well until recognized and treated. It is important to remember the abnormal ureteral endings. Many of these cases are being treated for incontinence, especially in the female, because the physician does not know about the existence of abnormal ureteral endings. One site is either in the vagina itself or just under the external meatus of the female or, in the male, in the prostatic urethra. This can be demonstrated by roentgen-ray catheters and pyelography. These abnormal ureteral endings may be associated with double kidney, so that it is possible to cure the incontinence by resecting the corresponding half of the double kidneys.

DR. IRVIN S. KOLL, Chicago: A short time ago a girl, aged 5 years, was brought to me with a history of pyuria, which had been present since the age of 6 months, and a typical clinical picture of pyelitis, with attacks of chills and fever, and more or less persistent pyuria. The child was undernourished, and although she did not present any particular picture of pain, she showed evidences of being somewhat septic. Under general anesthesia I made a cystoscopic examination and was surprised to find represented in the bladder

multiple diverticula. The ureteral orifices were not evident, and purulent urine could be seen coming down on each side and the conclusion was that the ureters were emptying into these diverticula. I filled the bladder with sodium iodid and then elevated the hips of the child, expecting that the fluid would flow back into the ureter, as it did, and we found a greatly enlarged ureter at one point and a reduplication at another. The iodid did not go all the way up into the pelvis, although there was a suggestion of a shadow. So far as I could see there was nothing that could be done for this patient.

DR. WILLIAM F. BRAASCH, Rochester, Minn.: It is high time that the pediatricians and the urologists were working in closer cooperation for the benefit of the unfortunate children suffering from these conditions. It is only in recent years that we have been brought to a realization of the importance of careful urologic examination of children, largely through the work of Bugbee, Hyman, Helmholz, Stevens and Kretschmer. I know of nothing more pathetic than the unfortunate child who has been allowed to suffer with pyuria or a tumor that has persisted for many years,

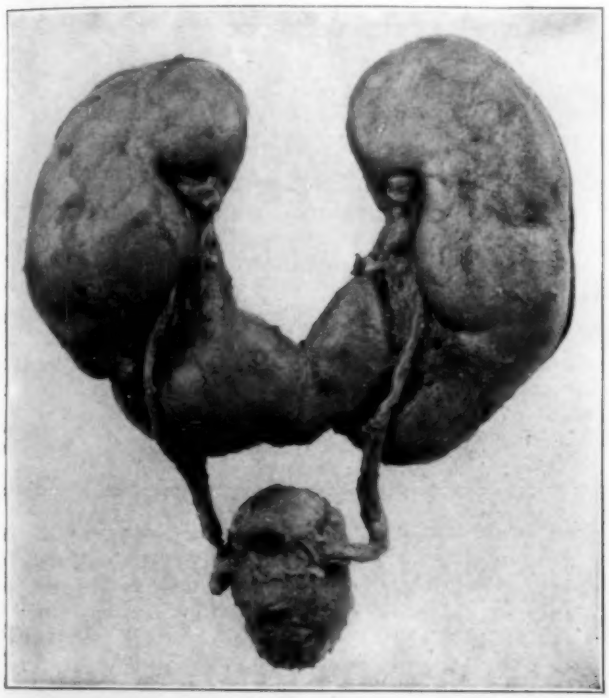

Fig. 12 (Case 50).—Horseshoe kidney; union at lower poles, with wide bridge of kidney tissue.

without careful urologic investigation. Abdominal pain in the child is too frequently called "intestinal colic," and renal tumor is seldom recognized in the early stages. Renal anomaly, owing to faulty urinary drainage, will frequently give clinical indication of its existence by a secondary urinary infection. If every case of persistent pyuria is carefully investigated, anomalies will be discovered more frequently, as Bugbee has shown. I would also call attention to the fact that not all tumors in the renal area are malignant. Hydronephrosis is occasionally observed, causing a large renal tumor, which on palpation is very firm and irregular and suggestive of neoplasm. A cystoscopic examination will readily differentiate the conditions. It should be emphasized that every case of persistent pyuria in a child should have a cystoscopic examination. A persistent pyuria, not the kind that lasts a month or so, but that which persists over many months or a year, demands cystoscopic investigation. If a unilateral hydronephrosis is found, surgical treatment is indicated. If there is no anomaly present, or if the condition is bilateral, cystoscopic treatment should be instituted. It should be recognized that persistent pyuria in the child is frequently due to some underlying anomaly of the urinary tract.

DR. BRANSFORD LEWIS, St. Louis: These studies of Dr. Bugbee's are valuable in two directions. They must be extremely interesting to the pathologist, but particularly in the clinical aspect are they valuable to practitioners. To see a child, as I did some time ago, 3 years of age, who for many months had been making a great effort at urination,

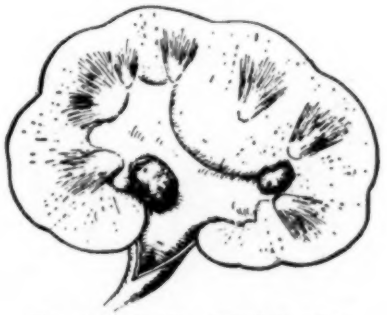

Fig. 14 (Case 63).—Calculi in pelvis.

each time having to strain and strain and cry out with pain; and to have a little patient like that go on in his suffering, treated only with some internal medicine, was heartrending. When the case was diagnosed by different methods of examination, it was determined that he had a very narrow constriction in the posterior urethra, right at the neck of the bladder, and we operated and gave relief. Compare this with a similar patient who had gone through infancy, adolescence, and up to the age of 42 years, who during every day of that time had spent much time in efforts at urination because of a contracture at the neck of the bladder which had never been diagnosed, and the contrast is great. Such patients go from one period of life to another and finally die of the destructive effects on the kidneys. This should cause us to

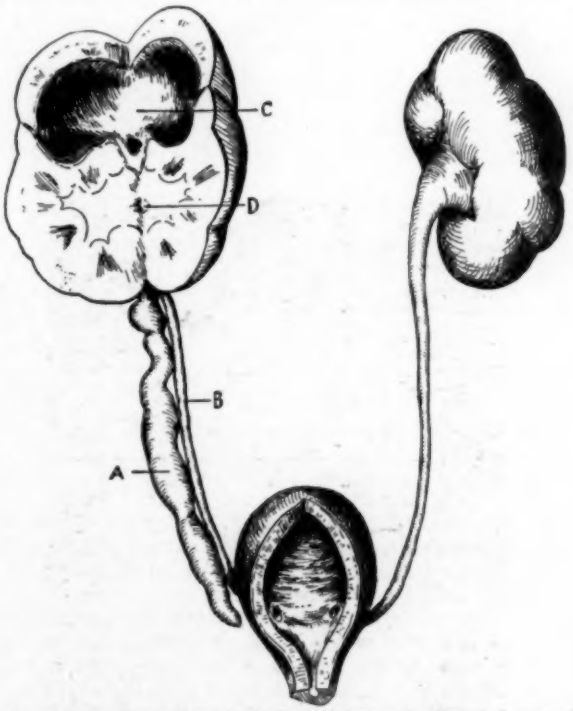

Fig. 20 (Case 75).—Single hydronephrosis: *A*, dilated ureter, from dilated upper pole, ending blindly just outside bladder; *B*, normal ureter, from normal lower portion of kidney; *C*, dilated upper third of bladder; *D*, normal lower part of kidney.

be on the lookout for these conditions, as Dr. Bugbee pointed out.

DR. WILLIAM E. STEVENS, San Francisco: I wish to emphasize the importance of thorough examination both in infants and in children. They are entitled to the functional kidney tests and every method of careful examination, and at times

to pyelography. I disagree with Dr. Braasch as to the length of time pyelitis should be allowed to run untreated in children. If this condition in infants does not clear up within a few weeks, we should perform cystoscopy and catheterize the ureters, and lavage of the ureters should be done in the presence of pyelitis. The youngest infant I have done this work on, by means of pelvic lavage, is 4 months and 9 days old. I think this is one of the youngest patients on record. This infant was in a very serious condition from pyelitis. Following one lavage, the improvement was marked; following the third pelvic lavage, the urine cleared up entirely and was microscopically negative. I think these little sufferers should be entitled to all the modern methods of diagnosis and treatment that we have at present.

DR. JOHN R. CAULK, St. Louis: It is such work as this that will put the urologists and pediatricians in proper relationship. In our hospital we are really trying to work in cooperation, but it is a struggle to get the pediatricians to allow cystoscopy to be done on their patients, and I know it is the same all over the country, but such reports as Dr. Bugbee's will be of great assistance in bringing about this cooperation. I wish to emphasize the importance of thorough investigation in any child who does not promptly clear up from pyelitis. Most of the protracted or recurrent infections in children are the result of some congenital obstruction, such as stricture in some part of the ureter or at the vesical neck, or to neurologic conditions. Within the last few weeks I saw a young boy who had a spina bifida and was operated on several years ago, with a beautiful result. A large meningocele was cured. He had always had a full bladder, with incontinence, and he had been allowed to go on with this, it being thought that it was due to the nerve lesion. He had had periodic catheterization and had almost died from uremia and absorption. We investigated and found that, instead of the obstruction being due to the spina bifida, it was due to a very sclerotic contracture of the vesical orifice. We removed this a little more than two weeks ago, and the boy is passing urine easily now. We must not take the existence of a nerve lesion for granted as the cause of such a condition, and must not allow it to keep us from investigating these children.

DR. CLINTON K. SMITH, Kansas City, Mo.: I have had the same experience as Dr. Caulk in not having the opportunity of seeing these children early. In the Children's Mercy Hospital in Kansas City we have been able to demonstrate, in almost every instance, some form of obstruction in the cases of infection (pyelitis) that did not respond to internal medication. I had a case which I believe demonstrates that the child voids urine before birth, and for that reason it seems fair to conclude that a certain amount of pathologic change, which is a result of obstruction, very likely develops before birth. This child had an obstruction in the anterior urethra, resulting in a large dilatation of the urethra in the perineum, with marked hypertrophy of the bladder musculature, with marked dilatation of the ureters and destruction of the renal structures. Incision was made, at birth, into the perineal pouch, after which the urine flowed freely. The child died at the age of 3 weeks. We have here a situation in which obstruction was present before birth and none after. It therefore seems fair to conclude that this pathologic picture, which is a familiar one above obstructions, occurred before birth.

DR. HERMAN L. KRETSCHMER, Chicago: Important as this paper is from the urologic aspect, I think it brings a definite message; namely, that we, as urologists, must be interested in other fields besides adult urology. The presentation of such a large percentage of abnormalities in infancy and childhood indicates that we must be in close touch with pediatricians. Dr. Bugbee's paper emphasizes the importance of getting the cases early, but this cannot be done without the hearty cooperation of the pediatrician. He also brought out the effect of nerve lesions, so that close cooperation with the neurologist is necessary in order to solve some of these problems in children.

DR. HENRY G. BUGBEE, New York: Something has been said about the age at which cystoscopic examinations can be carried out. I have introduced a cystoscope and catheterized the ureters in a girl, 15 days old, and a boy, 3 months old. The procedure is not more difficult to carry out in these very young children than in the older ones if under an anesthetic, one first uses small sounds, thus slowly dilating the urethra before introducing the cystoscope.

EXCISED DUODENAL ULCERS

A REPORT OF FOUR HUNDRED AND TWENTY-FIVE SPECIMENS *

WILLIAM CARPENTER MacCARTY, M.D.
ROCHESTER, MINN.

From 1906 to June, 1924, there have been 425 duodenal ulcers and ninety-seven localized inflammatory duodenal areas excised at operation and studied grossly and microscopically in the Mayo Clinic.

The largest ulcer was 25 mm. in diameter, and the smallest, 1 mm.; the average diameter of the ulcers was 5.5 mm.

Frequency of Excision of Duodenal Ulcer

	1907 and 1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	June 1, 1924	Total
Duodenal ulcer	3	0	4	1	12	39	17	6	6	27	49	41	42	27	68	63	18	425
Duodenitis	0	0	0	0	1	4	0	0	0	3	3	13	15	12	16	26	4	97
Carcinoma	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	3
Hemangioma	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Adenoma	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	2
Polyp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Diverticulum	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Myoma	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Scar tissue	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	3
Largest (millimeters)					19	10	..	10	8	10	15	15	23	20	25	15		
Smallest (millimeters)					2	2	..	1	3	1	1	2	1	1	2	2		
Average diameter (millimeters)					6.7	4.8	..	5.6	5	3.9	6	6.9	5.5	5.3	6.1	5.8		
Total number of duodenal specimens excised																		534

Four questions presented themselves in a study of this material:

1. Are duodenal ulcers similar to gastric ulcers in gross morphology?
2. Is there any difference between the appearance of duodenal ulcers at necropsy and at operation?
3. What is the relation of duodenitis to duodenal ulcer?
4. Do we find the same cytologic reactions suggesting malignancy in the tubules of duodenal ulcers that we find in gastric ulcers?

Experience with 1,269 carcinomatous gastric ulcers, 832 simple chronic gastric ulcers, 425 excised duodenal ulcers and ninety-seven excised chronically inflamed

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

(duodenitis) portions of the duodenum reveals the following facts:

1. Chronic gastric ulcers and duodenal ulcers are not infrequently multiple.[1]

2. Chronic gastric ulcers are usually larger than chronic duodenal ulcers when seen at operative exploration; they have deeper craters with greater diameters (Figs. 1 and 2).

3. Chronic gastric ulcers vary from 1 to 40 mm. in diameter, and duodenal ulcers vary from 1 to 25 mm. in diameter.

4. Chronic gastric ulcers vary from 1 to 20 mm. in depth, and excised duodenal ulcers vary from 1 to 5 mm. in depth.

5. All coats of the organic wall may be excavated in both gastric and duodenal ulcers.

6. Both types of ulcer may have their bases adherent to some neighboring organ.

7. In general, the relation of the diameter to the depth of the craters is such as to allow the generalization that duodenal ulcers are shallower than gastric ulcers.

8. There is less scar tissue in duodenal ulcers than in gastric ulcers.

9. Duodenal ulcers, at necropsy, are usually shallow, having wide craters with sharp, thin edges (Fig. 3); those which are excised during life resemble more closely gastric ulcers in shape, being, however, usually much smaller (Figs. 1 and 2).

10. The mucosa of the borders of gastric ulcers is usually hypertrophic and hanging over the crater (Fig. 2); that of the duodenal ulcers is usually approximately the same thickness as the normal duodenal mucosa and does not project over the crater (Figs. 1 and 3).

11. Postmortem changes are absent in excised ulcers.

12. Duodenal ulcers are usually in the anterior wall of the duodenum; gastric ulcers are usually in the lesser curvature or posterior wall.

13. The majority of the duodenal ulcers are in the first 5 cm. of the organ;[2] they are sometimes found, however, in other portions, and have been found at the papilla of Vater with the opening of the common duct in the crater[3] (Fig. 4). This condition is usually associated with cirrhosis of the liver as a result of the partial occlusion of the duct.[3]

14. There are no cytologic changes in duodenal tubules which suggest that carcinoma develops in them. In this series of 425 ulcers, no carcinomatous ulcers were found. During the same period of observation, three carcinomas of the duodenum were observed, but in no instance was there any apparent relation to an ulcer, such as is the case with gastric carcinoma and ulcer.

15. In tubules of the borders of gastric ulcers, one finds three definite cytologic conditions:

Some tubules are lined by normal secretory (differentiated) cells; in the tubules of some ulcers the differentiated cells are replaced by undifferentiated cells, which are morphologically indistinguishable from cancer cells, and sometimes these cells invade the surrounding stroma, in which case we call the condition carcinoma[1] (Fig. 5).

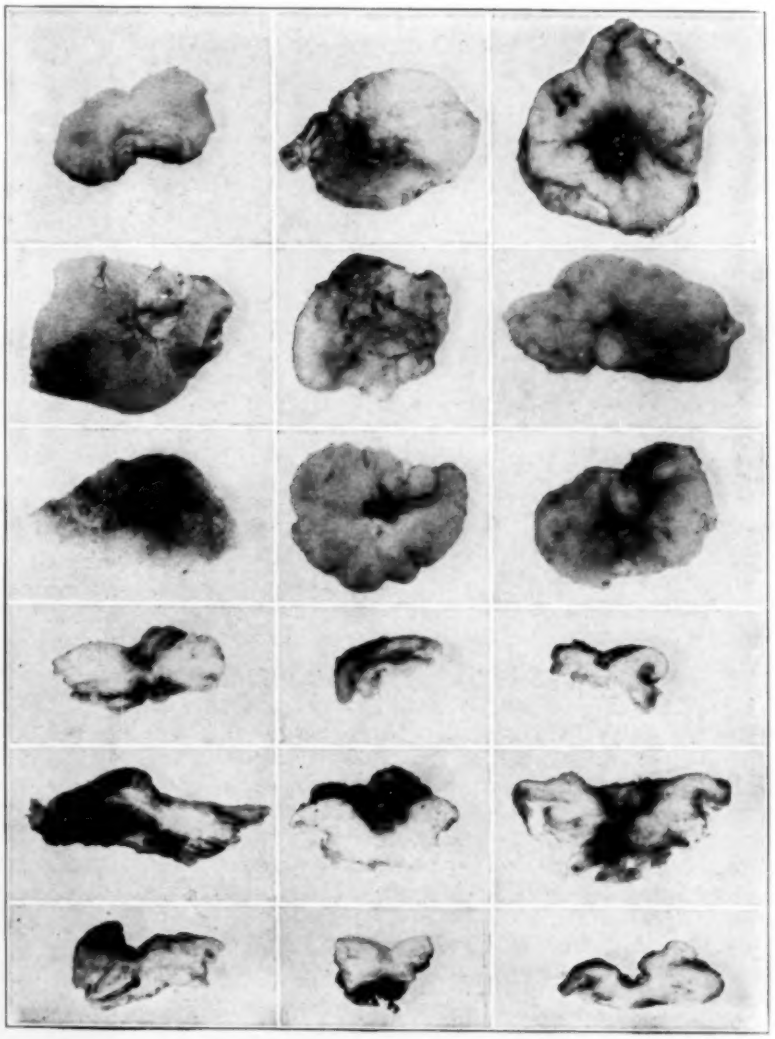

Fig. 1.—Series of excised duodenal ulcers, normal size.

In the tubules of the mucosal borders of duodenal ulcers, regeneration of epithelial cells is seen, but when seen, there is evidence of differentiation (Fig. 6 *d*); the nucleoli are small; the nuclei are smaller in proportion to the total volume of the cell than is the case in malignant cells, and the cytoplasm is denser and more granular than in malignant cells. In duodenal ulcers, the regenerating cells show frequently products of secretion (Fig. 6 *d*) which, in my experience, is never the case in malignant cells (Fig. 6 *e*).

These cytologic differences, be their cause what it may, are significant and very striking, since they are in accord with the clinical observation that gastric ulcers are frequently associated with carcinomatous changes and duodenal ulcers are not.

1. MacCarty, W. C.: Pathology and Clinical Significance of Gastric Ulcer, Surg., Gynec. & Obst., May, 1910. MacCarty, W. C., and Broders, A. C.: Chronic Gastric Ulcer and Its Relation to Gastric Carcinoma, Arch. Int. Med. **13**: 208-223 (Feb.) 1914. MacCarty, W. C.: The Pathologic Reasons for the Legitimate Error in X-Ray Diagnosis of Gastric Carcinoma and Ulcer, Am. J. Roentgenol. **4**: 67 (Feb.) 1917; Chronic Gastric Ulcer and Gastric Carcinoma, A Study of Five Hundred and Seven Simple Ulcers and Eight Hundred and Five Carcinomatous Ulcers, ibid. **7**: 591 (Dec.) 1920.

2. Carman, R. D.: The Roentgen Diagnosis and Localization of Peptic Ulcer, California State J. Med. **18**: 377 (Nov.) 1920.

3. MacCarty, W. C.: The Pathology of the Gall Bladder and Some Associated Lesions, Ann. Surg. **51**: 651 (May) 1910.

16. During the period of collection of this series of excised ulcers, there were also excised three carcinomas, two adenomas, one hemangioma, one adenomatous polyp, one diverticulum and one myoma.

The historical evolution of our knowledge of duodenal ulcers is of interest in that it had its known origin about

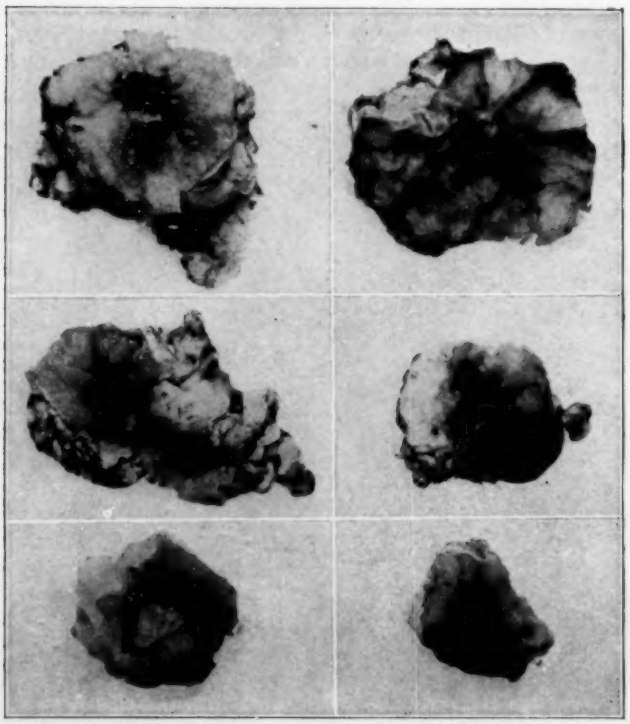

Fig. 2.—Series of excised gastric ulcers for comparison with the duodenal ulcer in Figure 1.

1817, when Travers [4] of London reported the condition. The earliest observations were made at necropsy. Soon clinicians suspected duodenal ulcer clinically and ventured clinical diagnosis. In 1887, such a diagnosis was made by Bucquoy [5] and confirmed at necropsy. Reports gradually accumulated and many monographs were written. According to Sir Berkeley Moynihan [6] the first successful operation for perforated duodenal ulcer was performed in 1894, by Mr. H. P. Dean. The treatment of perforating ulcer became a paramount issue in the last decade of the nineteenth century. Both medical and surgical treatment were advised. Gastro-enterostomy and excision have occupied the attention of surgeons mainly during the last twenty-five years, although excision has only recently become a comparatively frequent operation. In 1903, W. J. Mayo,[7] in a review of his experience with 303 operations on the stomach and the first portions of the duodenum, reported having excised three ulcers of the duodenum. The evolution of the frequency of excision of duodenal ulcer, as a therapeutic procedure, may be seen in the accompanying table.

That excision has not and probably should not replace other forms of treatment may be seen in the words of E. S. Judd: [8] "I am convinced that the excision of duodenal ulcers will never become general or take the place of gastro-enterostomy."

In a brief review of a study of this series of 425 excised ulcers, the main observation of interest is the difference in cytologic appearance in gastric and duodenal ulcers. This difference, although it does not explain why one is and the other is not associated with carcinoma, does record a definite biologic difference in the reaction to destructive agents in two very similar and closely related tissues in close proximity to each other.

Of great interest in this series is the excised inflammatory portions of the duodenum. Duodenitis has been a subject about which pathologists have avoided saying much. Thus, Aschoff [9] summarizes the general attitude of pathologists when he says, "Unfortunately, the knowledge of the changes in these catarrhal processes is very meager, because postmortem changes obscure the picture." Again we must depend on the surgeon to give us the opportunity for studying early pathologic conditions as they occur in living patients devoid of the artefacts of postmortem change and crude method of fixation.

The inflammatory reactions in duodenitis do not differ from those seen in other portions of the gastrointestinal tract in a fresh condition. There is cellular destruction, congestion, edema, migration of leukocytes, lymphocytes, and endothelial leukocytes. The condition is seen as localized and also diffuse lesions; when diffuse, the appearance of the organ, at exploration, is not readily confused with duodenal ulcer; but when it is localized, the external appearance of the serosa is indistinguishable from that seen in association with small ulcers. The surgeon, therefore, cannot be certain that an ulcer is not present. It is the localized congestion and stippling of the serosa which leads him to excision, because experience has shown that he frequently finds smal' round or elongated ulcers

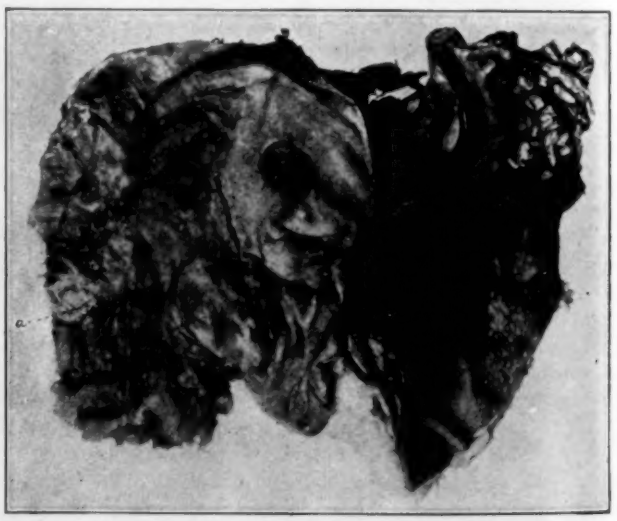

Fig. 3.—Necropsy specimen showing the pyloric ring and a shallow duodenal ulcer; *a*, opening of the common bile duct.

This brief review is made merely for the purpose of stimulating greater interest of clinicians, morbid anatomists and pathologists in the early lesions in the duodenum. It is only by studying them that we shall approach an accurate knowledge of the true etiologic factors.

4. Travers, cited by Moynihan (Footnote 6).
5. Bucquoy: Arch. gén. de méd. **1**: 398, 1887.
6. Moynihan, B. G. A.: Duodenal Ulcer, Philadelphia, W. B. Saunders Company, 1912.
7. Mayo, W. J.: A Review of Three Hundred and Three Operations upon the Stomach and First Portion of the Duodenum, Ann. Surg., July, 1903; Duodenal Ulcer: A Clinical Review of Fifty-Eight Operated Cases, with Some Remarks on Gastrojejunostomy, ibid., December, 1904.
8. Judd, E. S.: Excision of Ulcer of the Duodenum, Tr. Western S. A., 1921.
9. Aschoff, L.: Pathologische Anatomie, Jena, Gustav Fischer, 1909.

ABSTRACT OF DISCUSSION

DR. GEORGE B. EUSTERMAN, Rochester, Minn.: Dr. MacCarty has shown the pathologic characteristics of duodenal ulcers and mentioned the other lesions that may affect this organ, and has also shown the variations in the pathologic aspects of duodenal and gastric ulcers. As clinicians, we are concerned with the relative frequency of duodenal and gastric ulcer. During 1923, there came under our observation 280 cases of chronic gastric ulcer, as compared with 1,440 cases of duodenal ulcer. So the ratio is almost 1:5. In another series the ratio may be about 1:4. The pathologic complications of duodenal and gastric ulcer also concern the internist. The commoner complications are obstruction, retention without actual pyloric obstruction, hemorrhage, perforation and malignant degeneration. My opinion is that gastric ulcers are more inclined to cause hemorrhage, to gastric retention and malignant degeneration, while duodenal ulcers, by virtue of their being contained in a portion of the upper intestinal tract that has a smaller lumen, are more liable to constriction, and therefore pyloric obstruction. The perforative tendency of the two lesions is about the same, although, as Dr. MacCarty states, the crater of a gastric ulcer is deeper than that of a duodenal ulcer. Approximately 30 per cent. of all gastric and duodenal ulcers that come to the clinic have some form of complication either singly or in combination. We are interested in the newer pathologic conception of duodenitis, and perhaps Dr. MacCarty will tell us a little more about that. Clinicians and surgeons occasionally inquire as to what our conception of this type is. Clinicians will ask us whether the duodenitis type of ulcer is more amenable to nonsurgical healing than the ordinary ulcer. Perhaps Dr. Carman will tell us something about the roentgenologic differences in the two types of ulcer. My opinion of the duodenitis types of ulcer is that a very large percentage of cases clinically simulate the ordinary type, and I have noticed also that the roentgenologic characteristics were invariably the same. Our gross specimens of duodenal ulcers often show a contraction of the long diameter of the first portion of the duodenum, particularly in the old healing or healed chronic case, and that very frequently diverticulum formation is a result of this old chronic ulcer. We have definite postmortem evidence of the spontaneous healing of chronic duodenal ulcers. It still remains to be proved whether that type of ulcer is clinically comparable with the more resistant type that comes to operation or treatment.

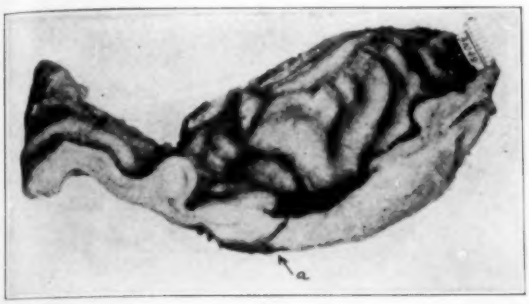

Fig. 4.—Gross section through ulcer of duodenum, showing the common bile duct passing through the scar tissue of the base of the crater of the ulcer.

DR. ALFRED A. STRAUSS, Chicago: I fully agree with what Dr. MacCarty said about the pathology. With his treatment, however, I cannot fully agree. Simple excision of duodenal ulcers does not eradicate the pathologic condition, because in from 30 to 40 per cent. of the cases there is a second ulcer 1 or 2 cm. farther down on the posterior wall. In most instances this posterior wall ulcer has infiltrated or has sloughed into the head of the pancreas. Gastro-enterostomy is not efficient in these cases. In many cases the posterior wall of the duodenum is completely gone at the site of the ulcer. In all these cases a radical resection should be done, separating the pancreas from the adherent duodenal wall—resecting the first portion of the duodenum, the pylorus and the lower half of the stomach. By this method I have had excellent results with a very low mortality. I have studied carefully the duodenums and stomachs that we have resected, and the histologic findings have been exactly what Dr. MacCarty has described. In many of these specimens we have found three and four scars of healed ulcers in the duodenum. The anterior wall ulcers seem to heal quite rapidly, while the posterior wall ulcers that infiltrate the head of the pancreas never heal, either by medical treatment or by simple gastro-enterostomy. I have noticed in cases in which operation has been performed immediately after admission both anterior and posterior wall ulcers not healed, whereas if the patient is put to bed for two weeks before operation, the anterior wall ulcer will be healed, while the posterior wall ulcer will not. Another important factor that Dr. MacCarty brought out is duodenitis. In making serial sections of the duodenums that I have removed, I found the entire duodenum up to the point of resection infiltrated with lymphocytes, plasma cells and eosinophils. In other words, the duodenum shows all the signs of chronic inflammatory processes. However, Dr. MacCarty did not mention that while the duodenal ulcer does not infiltrate the duodenal wall itself, the organ with which it comes in contact, such as the pancreas or liver, will become markedly infiltrated in a manner very similar to the infiltration of the gastric wall in a gastric ulcer. Regarding the type of operation for gastric ulcer, the large ones should be resected with a subtotal gastrectomy with a Polya operation, while the small ones can be operated on by longitudinal resection of the lesser curvature with sphincter resection of the pylorus. As to local cauterization or local excision, I operated on about fifteen patients by simple excision, and in all of them I later found larger ulcers than ever before, because it is next to impossible to get outside the local inflammatory zone by simple excision—which fact speaks highly in favor of subtotal resection in these cases.

DR. R. D. CARMAN, Rochester, Minn.: The roentgenologic diagnosis of duodenal ulcer is based on two points: first, deformity of the duodenum, and, second, a large normal stomach with six-hour retention and hyperperistalsis. In the crater type of ulcer, or niche type as described by Dr. MacCarty, the roentgen-ray findings will show the niche, which is the visualized crater of the ulcer; it will show organic deformity and spasmodic deformity. The duodenitis type will also show spasmodic deformity.

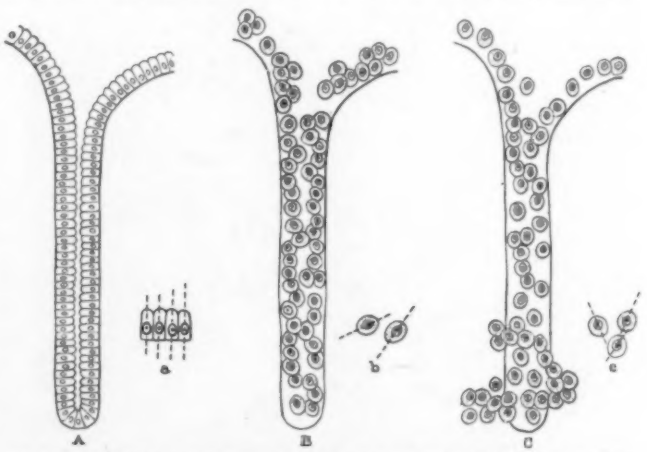

Fig. 5.—Cytologic pictures found in the mucosa of chronic gastric ulcers: *A*, normal gastric tubule with columnar epithelium, the long axes of which are parallel; *a*, individual cells lining a normal gastric tubule; the nuclei of the cells are about one-third the volume of the whole cell. *B*, gastric tubule found in the mucosa of some chronic gastric ulcers; the columnar cells are replaced by ovoidal or spheroidal cells containing nucleoli; the long axes of the cells are not parallel; the nuclei are about one half the volume of the cells. *C*, gastric tubule sometimes found in the mucosa of chronic gastric ulcer; the cells are similar if not identical with the cells in tubule *B*, but they are also found in the stroma.

DR. W. C. MACCARTY, Rochester, Minn.: Pathologists have for many years been just a little careful about describing duodenitis and gastritis. The reason for this has been rapidly occurring postmortem changes in the mucosa of the

gastro-intestinal tract. Since the surgeon has given us an opportunity to study pathologic matter in a fresh or living state, we can recognize what we knew theoretically must be present. In duodenitis we have the same signs of inflammation that we have anywhere else in the gastro-intestinal tract —congestion, edema, leukocytic and lymphocytic infiltration, and fibrosis. It is very difficult frequently to differentiate between duodenal ulcer and duodenitis at operation from the external appearance of the serosa, and often it is impossible

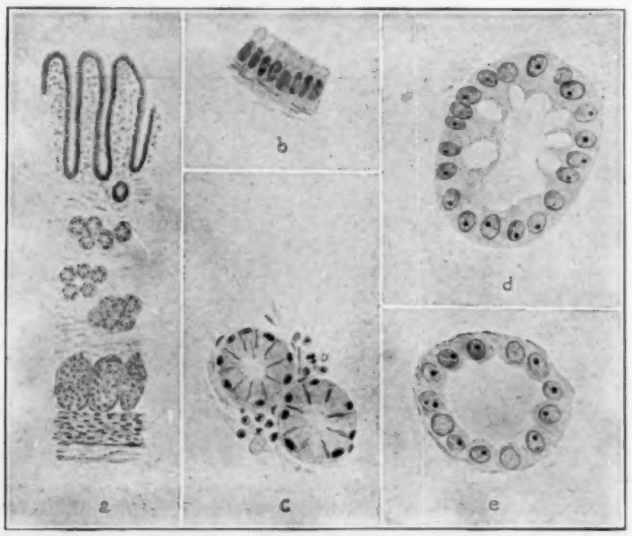

Fig. 6.—*a*, coats of duodenum; *b*, approximate relation of size of nucleus to size of cells in the duodenal tubules; *c*, cells of Brunner's glands in the submucosa; *d*, regenerating cells in duodenal tubules; *e*, regenerating cells (secondary cytoplasia) in a gastric tubule from the border of a chronic gastric ulcer for comparison.

for the surgeon to determine whether or not a small duodenal ulcer is present. There is a localized area of stippling and congestion which the surgeon a few years ago described as characteristic of duodenal ulcer. He now knows that it also occurs in these localized conditions of duodenitis. In regard to the question of excision of ulcer, it seems to me that there are only two reasons why I should have a duodenal ulcer excised if I had one: the fear of liability of hemorrhage, and the likelihood of production of stenosis in the duodenum. As far as I know, those are the only real reasons for excision

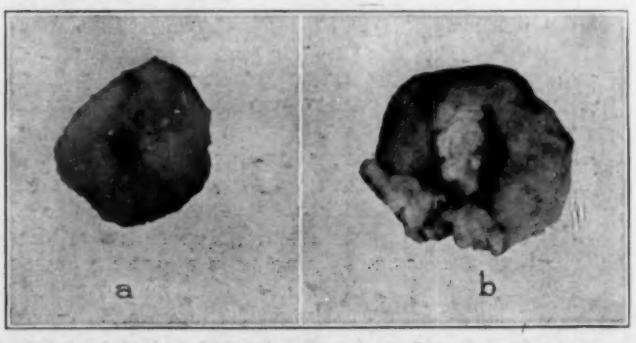

Fig. 7.—Extremes of size in excised duodenal ulcers: *a*, small excavation of mucosa without thoroughly defined edges; *b*, wide, shallow excavation with relatively sharp edges.

of an ulcer, and I think these are the reasons the surgeon usually accepts. Excision is not a routine procedure in our clinic. So far as the multiplicity of ulcers is concerned, multiplicity is a thing we see in both gastric and duodenal ulcers. Recurrence of ulcer after excision does happen, although it is not frequent. Dr. Strauss' remarks are perfectly correct that after excision or gastro-enterostomy in a case of duodenal ulcer we occasionally find a recurrence. He also said something about the shallow duodenal ulcer having a thick base, which is quite in accord with my own experience.

THE EARLY DIAGNOSIS OF TRUE HERNIA OF THE DIAPHRAGM

DONALD P. ABBOTT, M.D.
CHICAGO

True hernias of the diaphragm are those which have a sac of peritoneum, or pleura or both. The nontraumatic type occur through preformed openings or at their margins. Their occurrence is probably dependent on an acute or chronic increased intra-abdominal pressure. The preformed openings are as follows:

1. The esophageal foramen.
2. The foramen of Morgagni, at the junction of the sternum and the seventh costal cartilage on either side.
3. The foramen of Bochdolek, posteriorly between the lumbar and costal division of the diaphragm.
4. The point of entrance for the sympathetic nerve, between the external and median crura.

Hernias through, or at the side of, the esophageal opening are much the most common. In no case has a hernia passed through the orifices of the aorta or vena cava. In most cases, the hernia enters the left pleural cavity. Often it is found in the posterior mediastinum, especially in early hernia, but rarely is it found in the right pleural cavity.

The first abdominal viscus to enter the hernial sac is usually the stomach, and for this reason, with the aid of fluoroscopy, these true hernias should be discovered in an early stage. A review of the literature, however, shows relatively few small hernias. Most case reports show a large sac with most of the stomach and even parts of other organs herniated.

It is my opinion that true hernias of the diaphragm, especially periesophageal, are much more common than is generally supposed. They are not found in the early stage because, owing to the fact that the sac is very small, the subjective symptoms are often slight. For the same reason, objectively, there are no findings on employing inspection, palpation, percussion and auscultation.

The most important means of examination is fluoroscopic. This must be made in a certain manner. The ordinary method, employed with the patient drinking the opaque solution standing, will fail entirely to reveal the hernia, as shown repeatedly in my cases. But if, after drinking the solution, the patient is examined while lying on the back and on the abdomen, a greater degree of success will be obtained. I suggest that certain instructions be given to the patient during this procedure: to take a deep breath, hold it and strain. This first act results in a decreased intrapleural and intra-esophageal pressure, and an increased intra-abdominal pressure, thus favoring the entrance of a part of the stomach into any hernial sac of the diaphragm. The deep inspiration also brings the liver shadow down so that the region of the esophageal opening, which lies posteriorly, is more clearly viewed. The final step of pressing on the abdomen or having the patient strain, thereby increasing the intra-abdominal pressure further, may also favor the detection of a small hernia. As the patient carries out these instructions while lying on his back, he is turned to his right, thereby bringing the opaque solution in more intimate contact with that part of the stomach which lies closest to the esophageal opening in the diaphragm. The turning to the right continues until the patient rests on the right side, and partly,

and finally wholly, on the abdomen. The deep breathing and straining is continued at short intervals.

I am convinced that this procedure, when carried out as a routine, will reveal many small hernias which otherwise would go undiagnosed. The hernia shadow is seen above the diaphragm, and is rounded, varying from the size of a hen's egg to that of a small orange.

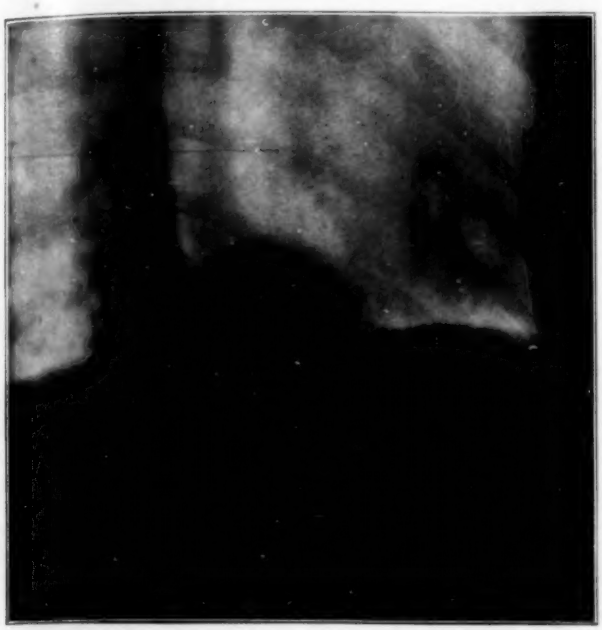

Fig. 1 (Case 1).—Hernia of diaphragm, periesophageal; patient lying on right side of abdomen.

It may be bisected by the esophageal shadow, so that there appears to be a localized dilatation of the esophagus. Dilatation is, however, excluded because of the absence of symptoms of esophageal stagnation and the absence of an etiologic factor. Furthermore, the shadow is not fusiform but angular, and there is no abnormal shadow with the patient in an upright position. As the patient is turned, the rounded shadow is seen to lie at the side of the esophageal shadow, usually displacing the latter to one side, as seen in the accompanying illustrations.

REPORT OF CASES

The subjective symptomatology as seen in the five cases that I am reporting is interesting; I will give the case records of two:

CASE 1.—Mrs. L. K., aged 42, white, seen, Jan. 9, 1922, complained of epigastric pain, vomiting, constipation and dizziness. Vomiting had been present two years. At first it occurred about one-half hour after retiring. Without retching, she would bring up two to four mouthfuls of food, which was sour. This would be followed by true retching and vomiting. It seldom occurred during the day, but lately she had noted that the sooner she lay down after a large meal the more likely she was to have pain and vomiting. Vomiting was always preceded by a sensation of something moving up and down in the esophagus. This was reproduced during the fluoroscopy, when the opaque solution was seen moving up and down in the esophagus. Epigastric pain had been present for a shorter time and absent for one to two days at a time. It might appear on lying down, or one to two hours after eating, last one hour and be gone by the third hour after eating. A large meal or soda, 1 dram (4 gm.), would give her relief, if she belched. All symptoms might be absent for days at a time. Again she would be awakened from a sound sleep by pain. No nausea was noted. The rest of the history and the evidence obtained by study had no bearing on the condition (Fig. 1).

CASE 2.—Mrs. A. R., aged 50, white, who entered the Presbyterian Hospital, April 3, 1923, complained of a burning epigastric distress, headaches, joint pains and aching in the left scapula region. The burning had been present occasionally for years, was localized, appeared from one and a half to two hours after meals, and was relieved by soda, food and magnesia. A half glass of water would start the distress. She had been awakened by distress at 3 or 4 a. m., and induced vomiting, producing small amounts of food eaten at the evening meal. Though the patient was relieved by alkalis, the distress might recur shortly. Tests of the gastric content at such times showed no free hydrochloric acid, speaking against peptic ulcer as a cause of the discomfort. Rumination was also noted in this patient as in Case 1. The rest of the history and the evidence obtained had no bearing on the condition (Fig. 2).

In the other three cases the epigastric distress was milder but of the same character as described in the two preceding ones. There was no vomiting.

Patient 1 has developed a pain in the left supraclavicular region, probably due to phrenic nerve irritation.

All five cases have been observed one year or more, and only in the first case have the symptoms been progressive. None have been operated on. All the patients had a considerable degree of fermentative and cathartic colitis.

The correction of the colon condition, with the resulting cessation of gas production and reduction of intra-abdominal pressure, while causing an improvement in the patients' symptoms, has failed to give absolute relief.

SUMMARY

1. Small hernias of the diaphragm, especially periesophageal, are much more common than is usually supposed.

2. A careful study of the symptomatology should suggest their presence.

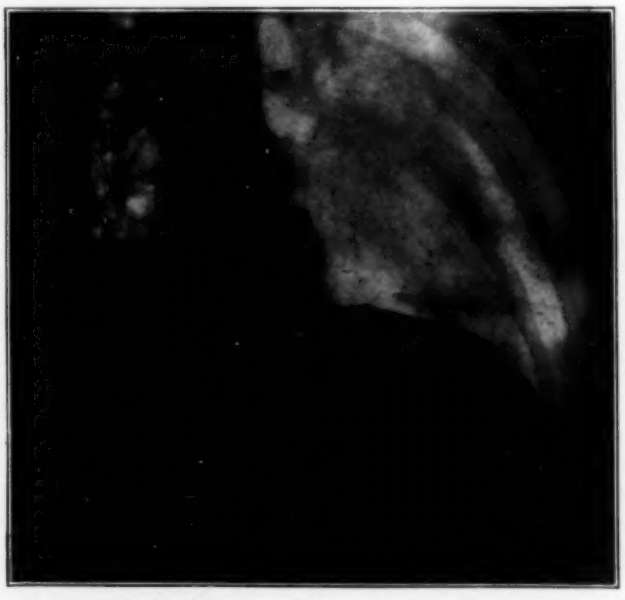

Fig. 2 (Case 2).—Hernia of diaphragm, periesophageal; patient lying on right side of abdomen.

3. Routine examination of the patient with the fluoroscope, as described, will reveal small periesophageal diaphragmatic hernias, which will otherwise be missed.

4. Needless to say, the repair of a small hernia is less difficult than the repair of a large one, and the dangers of complications are less in the former.

122 South Michigan Avenue.

THE SURGICAL TREATMENT OF MENINGITIS

THIRD COMMUNICATION *

WELLS P. EAGLETON, M.D.
NEWARK, N. J.

The treatment of meningitis is still in its infancy. This paper, my third on this subject, is an attempt to place its surgical treatment on a basis that is in accord with neuropathologic findings.

When I adopted subarachnoid irrigation, three years ago, I,[1] with the rest of the profession, was trying to develop a method of drainage for the cerebrospinal fluid system. Later [2] I realized that, on mechanical grounds, irrigation was impossible, while, from physiologic considerations, drainage of the system was fallacious.

This paper embodies my experience during the last two years. I have analyzed my cases, both successful and otherwise, and have attempted to interpret them in the light of our present knowledge of applied pathology of the cerebrospinal system.

MENINGITIS

The cerebrospinal system is of late development. Phylogenetically, it is the last of the chain of circulatory systems that life has evolved. It has a relationship with the central nervous system similar to that of the lymphatic system to the tissues, for it carries nutritional juices from the cells of the nervous system, and through it are discharged the deleterious products of nervous tissue activity. The anatomic formation of the subarachnoid spaces shows their functional importance. They are connective tissue communicating spaces lined with endothelium (Milian). It is with such an anatomic formation that Nature supplied her circulatory systems.

Fig. 1 (Case 3).—Appearance of brain in case of subdural meningitis.

The heart, arteries, veins and capillaries all have a mechanism for the propulsion of blood, but the movement of the fluid in the lymphatic and cerebrospinal system is not provided for by any propulsive system; this is supplied by the tissues themselves, whose continued functional existence is largely dependent on these systems.

It is not definitely known how the fluid itself originates; probabily it is by a process of filtration. The old conception that it was secreted by the choroid plexus is probably false, as the choroid plexus contains no real secreting elements whatever. The fluid probably comes from the blood vessels, through the choroid plexus; certain ingredients filter through with its watery element. It contains substances necessary for the nutrition of the brain, which it furnishes in the intracellular spaces.[3]

It is not positively known how the cerebrospinal fluid circulates; it is probably by the influence on the brain mass of the impact of the systolic and diastolic action of the heart, plus the influence of respiration through the rise and fall of venous pressure.

These changes in the brain's bulk causes an ebb and flow of the cerebrospinal fluid system; and the fact that in the cisterna of the base lies the large arterial supply to the brain is of surgical as well as physiologic significence.

There is probably no definite direction to the circulation as in the hemic circulation; it is more of an "ebb and flow" caused by the brain's pulsation, thus mixing the fluid and carrying it to the different areas in which it is best absorbed.[4] There is no reason to believe that the flow must proceed from behind forward, as I previously suggested,[5] as we do not know that this is the direction of the flow.[6]

Mestrezat believes that the perineural prolongation of the olfactory nerve has something to do with the drawing of the cerebrospinal fluid forward, and the continued rhinorrhea that results from nasal operations, which persist until death from meningitis, lends some support to this view. This would not be the case were there not some definite physiologic reason, as the tendency of all other openings into the system is quickly to close spontaneously, even when the injury involves a perineural space surrounded by bone, as in the labyrinth. There is some connection between the perineural sheaths of the olfactory nerve and the cerebrospinal fluid system, which must be more than simply mechanical.

Menakov, on the other hand, believes that the ventricular fluid supplies the nerve cells with substances not to be obtained in the blood, which substances are necessary for its proper functioning.

After passing into the intercellar spaces of the brain's substance, the fluid now containing material that has been formed in this metabolism of the nerve cells is discharged into the perivascular spaces of the cerebrospinal fluid system. These perivascular spaces run beside the blood vessels of the cortex. The fluid passes over the cortical surface and reaches the villa of the superior longitudinal and other sinuses, through which it is discharged into the venous system, so that from beginning to end there is an intimate relationship between the blood and cerebrospinal fluid systems. This is especially manifest in the basal cisterna, where, by an increase of salt in the blood, fluid can be drawn from the brain mass.[7]

However, while there is a free communication of the cerebrospinal system with the system of the blood, there is between them a barrier that prevents deleterious substances entering the cerebrospinal circulatory system from the blood, although fluid itself passes easily from

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* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

1. Eagleton, W. P.: Tr. Am. Otol Soc., 1921.
2. Eagleton, W. P.: Atlantic M. J. **26**: 575 (June) 1923.
3. Injury to the brain is frequently followed by the development of a subarachnoid cyst in the neighborhood of the injury, showing that the fluid was not brought by the subarachnoid spaces but developed there.
4. This is shown by the fact that the exudates are frequently found in the horns of the ventricles. Also I have in lumbar punctures obtained one test containing 4,000 cells and the next only 2,000 cells.
5. If a cadaver is embalmed and fluid injected under pressure into the basal cisterna of the middle fossa, it will be discharged from the nose. Whether this is due to a normal pathway being open or from trauma of the injection to the arachnoid prolongation of the olfactory, I do not know.
6. That embryologically, at least, there is some flow in a definite direction is suggested by the frequent development of an internal hydrocephalus if a spina bifida is closed surgically.
7. This is one of the big advances in surgery; viz., that at will we are by this means enabled to reduce the bulk of the brain.

one system to the others. It is by means of this mechanism that Nature protects itself from infection of the brain.[8]

In septic meningitis of otitic or nasal origin, the mode of entry of the infection is generally either (1) from sinus thrombosis; (2) from the labyrinth; (3) from thrombophlebitis of a small vessel, and only to a much lesser degree (4) by direct extension, which latter always occasions a localized but aseptic meningitis.

A compilation of postmortems shows that sinus thromboses caused 27 per cent. of the cases of meningitis, but almost 10 per cent. more had thrombosis of the small veins of the bone, making a total of 37 per cent. of thrombotic venous origin. The labyrinth caused 30 per cent., while of the remaining 33 per cent., the cause was not discovered in 20 per cent., and brain abscess 13 per cent.; but I believe, from experimental and clinical evidence, that considerable of the 20 per cent. of unknown origin probably have a phlebitis of a small vessel as the occasion of the meningitis.

Necropsies demonstrate that the infection generally originates in the basal cisterna of the cerebrospinal fluid system, to which region it is limited for a considerable period, while in blood stream infection "the purulent meningeal infiltrate is almost exclusively confined to the cerebral vertex, although a large quantity of thin purulent fluid is present at the base."[9]

That the whole cerebrospinal fluid system is but slowly involved is testified to by the clinical fact that the majority of cases of otitic origin have a period of vague meningeal symptoms, associated with a manifestation in the cerebrospinal fluid.

The entry is usually made through the basal cisterna, not at the cortex, and it is in the basal cisterna that the veins and arteries actually lie.

Fig. 2 (Case 3).—Appearance of brain in case of subdural meningitis.

If the posterior fossa of a cadaver is approached from in front by the petrous pyramid so that, instead of looking on the brain, one looks down on its base, it can be seen that the vessels themselves are in this network. Now this is exactly the place where nearly all the meningitides of otitic origin from the labyrinth have their beginning.

When not due to sinus thrombosis, labyrinthitis or brain abscess, meningitis of aural or nasal origin arises either from (*a*) infection; retrograde thrombophlebitis of a small vessel entering the dura, or from (*b*) an osteothrombophlebitis from an uncontrolled pachymeningitis interna from adjacent bony necrosis (osteophlebitis).

SURGICAL CLASSIFICATION

Surgical cases of meningitis should be divided into: (1) fulminating or acute; (2) exudative or subacute, and (3) protective.

PROTECTIVE MENINGITIS

More patients with meningitis following fractured skull recovered than following ear diseases, and I believe that it is because of the difference in the pathologic process present. In fractured skulls, although the invading organisms enter directly the cerebrospinal fluid system by way of the fracture, still all the protective forces have time to muster immediately on receiving the trauma and before the micro-organisms have developed. When the micro-organisms begin to develop, they are actively combated by the protective reactions that are already in operation.

In meningitis of both aural and nasal origin, if the invasion of the cerebrospinal fluid system is by direct extension, such as occurs in fistulas of the dura, the protective reactions are also present at the time of the invasion.

CASE 1.—E. S., whose skull had been fractured, had nausea, vomited, and was stuporous. Six days later the patient had headache, Kernig's sign was positive, the neck was stiff, and there was spontaneous nystagmus, right, hallucination of hearing and photophobia, all symptoms clinically meningitis. Lumbar puncture yielded cloudy fluid. The middle fossa was opened; into it a spica of bone was projecting. There was a discharge of a large amount of fluid containing micro-organisms. Irrigation of the subarachnoid spaces in the region of the fracture was done. The patient recovered.

In labyrinthitis, the usual course is for the protective type to pass into the subacute, while in thrombophlebitis there is generally a considerable period of subacute inflammation of the basal cisterna, followed by an acute toxic exudative inflammation of the whole cerebrospinal system.

SO-CALLED CONCOMITANT FULMINATING MENINGITIS

The proportion of meningitis of blood stream origin with a concomitant otitis media or sinusitis cannot at present be determined. But my experience leads me to believe that the vast majority have suppurating ear or nasal sinuses for their cause, for otherwise how can be explained the cerebral symptoms that so frequently accompany the original ear or sinus attack? These, often subsiding after a mastoid operation has been performed, are too frequently disregarded.

But in all these cases of fulminating meningitis, surgery is useless, as the cerebral symptoms result from the circulating pneumococcus attacking the intima of the cerebral vessels, causing the well known pial hemorrhages.

The only hope of successful treatment for meningitis of blood stream origin is by some serum to overcome the blood stream infection, after the primary nodus of infection in the mastoid has been removed and the basal cisterna originally attacked evacuated.

SUBACUTE (EXUDATIVE) TYPE

For the milder types of meningitis, the exudative types, something can be done surgically if we will follow the pathological indications; viz., (1) to attack the original focus of infection and (2) to remove the infection from the cerebrospinal system while it is still limited to an area adjacent to its original site.

8. If micro-organisms are injected into the cerebrospinal fluid of an animal, they will be found a few minutes later in its heart; but micro-organisms from the blood do not enter the meninges unless some other factor is added, such as trauma to the cerebrospinal fluid system itself.
9. Roy: Lactic Acid Meningitis, J. Lab. & Clin. Med., January, 1923.

AREAS OF THE SYSTEM PRIMARILY ATTACKED

When the middle fossa is invaded, it is frequently by means of a pachymeningitis interna from a carious area.

From this pathologic fact the surgical inference may be drawn that any area of the dura which at operation is macroscopically involved by an overlying bony necrosis should be the object of suspicion, and in the advent of symptoms of meningitis we should attempt to argue what part of the cerebrospinal fluid system has been first invaded from the particular area.

Postmortem observations have demonstrated that the tegumen of the antrum or the tympanum is but rarely the path of infection into the meninges, as here, for some reason, a pachymeningitis exterior and interior generally effectively prevents the spread of the disease into the meninges. Clinically, these cases rarely develop meningitis. The invasion into the middle fossa generally occurs from a retrograde thrombophlebitis or perivasculitis, as clinically and at postmortem pachymeningitis externa and interna are comparatively rarely present.

Pathologic observation and clinical experience definitely demonstrate that the meningeal infection is limited frequently for several weeks to the piarachnoid spaces of the basal cisterna where the invasion occurs from a bony necrosis.

Fig. 3.—Hemorrhage in the piarachnoid.

CASE 2.—J. D. had an irregular earache with elevation of temperature for six weeks, associated with vomiting; irregular headache; no discharge from the ear; no mastoid tenderness; paralysis of the external rectus; beginning papilledema, and positive Kernig's sign. There was no stiff neck. Lumbar puncture was done. There was a cell count of 150; culture yielded a gram-positive organism. At operation, the mastoid was found filled with mucus. There was a slight exudate over the dura of the middle fossa. Subarachnoid irrigation was done from the frontal and temporal region to the occipito-atloid and lumbar. Examination of washings revealed 300 cells and numerous micro-organisms, including *Streptococcus mucosus*. The next day the patient was in excellent condition. There was slight exophthalmos of the left eye. Four days later the patient's condition was so much improved by irrigation that the parents requested it be repeated because of high temperature. Death occurred five days later. Postmortem examination revealed general meningitis. There was a large amount of effusion over the base, particularly around the chiasmal cisterna. Directly over the petrous pyramid, a small thrombosed vein entered the dura and had connection with the cerebral cortex.

With infection from deep cell involvement, evacuation of fluid from the meshes of the piarachnoid of the cortex (unless it is overlaid by diseased bone) or even from the under surface of the temporosphenoidal lobe will fail to reach the area of the cerebrospinal fluid system primarily and chiefly involved—the basal cisterna, for almost every postmortem demonstrates that it is here that the chief infection occurs, from which it passes to the under surface of the brain, the cisterna interpeduncularis. When the infection comes from a thrombophlebitis of the sigmoid sinus, the part of the cerebrospinal fluid system that is primarially involved is the lateral meshes of the piarachnoid, from which it travels to the cisterna medullocerebellis.

When the infection originates from the internal auditory canal of the labyrinth, the cisterna pontis is at first involved, from which it passes to the upper surface of the cerebellum below the tentorium cerebelli, and from there extends to the cisterna interpeduncularis.

From cadaveric intra-arachnoid irrigation and pigment infection, I am persuaded that the basal cisternae are divided by delicate septums which almost completely separate them from each other except by small communicating channels, and that the two sides are divided one from the other, at least over the anterior part of the cerebellum. These small channels are closed by the inflammatory process in Nature's effort to limit the disease.

In postmortems the result of twelve fatal cases of meningitis, Davis [10] observed that "large collections of thick gelatinous pus were found between the tentorium and the cerebellum, also in the cisterna interpeduncularis surrounding the optic chiasma and pituitary fossa. In advanced cases the meningitis was beginning to spread along the sylvian fissures to the cerebral cortex."

In a recent communication, he [11] states that he confirmed these tracts by injections of colored fluids.

SUBDURAL SPACE MENINGITIS

When the infection comes from a bony necrosis or osteophlebitis, as in frontal sinus disease, there may be present an infective process limited to the subdural space, and this may extend great distances, with later a general involvement of the subarachnoid spaces, which in them is a terminal process.

CASE 3.—*Subdural meningitis.* A patient with chronic frontal sinusitis had meningitis of two weeks' duration. Lumbar puncture yielded cloudy fluid. Operation revealed the subdural space filled with free pus. On washing away, there was a normal piarachnoid beneath. The patient died. Postmortem examination revealed an extensive yellowish exudate over both hemispheres, entirely confined to the subdural space. The piarachnoid was involved only in isolated places, from erosion.

From these contentions it is evident that all successful treatment depends on an early diagnosis, not only of the presence of meningitis, but also of the exact point of entry into the cerebrospinal fluid system.

Today such early and exact diagnosis is possible in a considerable number of cases, provided the surgeon systematically avails himself of a complete and careful history, and examination assisted by the newer laboratory methods.

10. Davis, E. D. D.: Some Observations on the Early Diagnosis and Drainage of Otitic Meningitis, Proc. Roy. Soc. Med. (Otol. Sect.) **15**:9 (Feb.) 1922.
11. Davis, E. D. D.: J. Laryngol. & Otol. **38**:427 (Aug.) 1923.

DIAGNOSIS

In the past, we have waited until the whole cerebrospinal fluid system has become invaded by bacteria before we have called it meningitis.

In taking this attitude, we have disregarded the obvious thing, which is that in the majority of cases of meningitis of otitic, nasal or traumatic origin, the initial period of meningeal inflammation is limited, although many of the fulminating cases apparently passed from health into a general suppurative meningitis in a few hours. This can also be said of some prolonged cases, which result in an acute fulminating termination.

CASE 4.—F. P. had acute otitis media of both ears, which rapidly healed. One ear, however, continued deaf. There was little headache, but the patient did not feel well for several weeks. Suddenly, on exposure, there occurred chill, high temperature, delirium and nystagmus, all within a few hours. The patient died on the following day. Postmortem revealed pachymeningitis externa over the antrum, which had undoubtedly been present for at least six weeks, and had suddenly given rise to an acute exudative meningitis, with a localized patch over the cerebellum (which latter had occasioned the sudden nystagmus) and general sepsis.

Thirty years ago the abdominal surgeon, in the absence of a localized collection of pus around the appendix, waited to operate until a general peritonitis developed.

Today we too often delay our diagnosis of meningitis until bacteria are found in the lumbar puncture 3 feet away from the area of infection. The symptoms in the early stages are vague; they are the result of irritation or of loss of function of the superficial layer of the cortex.

Given headache and vomiting in a case of ear suppuration, we should suspect a beginning intracranial involvement, probably meningitis.

The old conception that we must have stiff neck, vomiting, headache and a positive Kernig's sign before diagnosing meningitis must be abandoned. When these are present it is because the meningitis has extensively attacked the base of the posterior fossa. Similarly, contrary to the generally accepted view, there is no increase of the intracranial pressure in the early stages of meningitis because, no matter how excessive the production of fluid may be, in Nature's attempt to limit or eradicate the bacterial irritant, this excess fluid is immediately removed by absorption into the blood vessels. Compression may occur in the terminal stage, owing to plugging of the cerebrospinal fluid pathways, producing an internal hydrocephalus.

TOXIC AND LOCALIZING SYMPTOMS

If we are to diagnose meningitis early, we must recognize that all symptoms should be divided into (1) toxic symptoms, under which headache and fever occur, and (2) localizing symptoms. The latter will depend on the brain's area involved by the infection, and this, I think, bears a definite relationship to the part of the cerebrospinal fluid system originally attacked.

If at the base we have stiff neck, positive Kernig's sign, vomiting, strabismus, etc., if the meningitis is of the cortex, none of these are present; but the symptoms may be limited to those of cerebral toxemia, continuous fever, vomiting, delirium and high leukocytic count.

HOW TO LOCALIZE

If outspoken manifestations of disturbed function of the cortex, such as word deafness and psychic blindness, were systematically investigated, in cases of suspected meningitis, instead of regarding them as manifestations of delirium or of elevated temperature, I am sure, from my own experience, that much localizing evidence would be obtainable.

A localizing diagnosis may be made from a careful study of all slight symptoms, asking ourselves whether they can be caused by involvement of the cerebrospinal fluid system, adjacent to the area of infection. Headache, vomiting, pain behind the eye, slight intra-ocular congestion, high cell count, increased fluid from occipito-atloid puncture, excessive fluid on puncturing the dura over the under surface of the temporosphenoidal lobe and a feeling of "ill being" are symptoms not only of cerebral involvement but of localizing value if interpreted in the light of a positive blood culture, a non-reacting labyrinth and previous operative findings.

DIAGNOSTIC VALUE OF OCULAR PALSIES

Ocular paralysis may be a symptom of deep cell involvement, but with it is generally associated a localized basal cisterna meningitis, as the third and sixth nerves both pass through the basal cisterna interpeduncularis.

Clinically, I have come to regard meningeal ocular paralysis as a symptom of involvement of the base, either in the (1) basal cisterna, or possibly (2) originating from pressure where the sixth nerve passes under the petrosphenoidal ligament.[12]

The third, fourth and sixth nerves lie in the subarachnoid cisterna. The fourth has the largest intracranial portion (85 mm. long). The sixth (abducent) is contained in the cisterna pontis and is invested by arachnoid membrane 15 mm. from its origin. It perforates the dura, opposite the dorsum sellae of the sphenoid. It is more frequently paralyzed, because of its long course beneath the dura and under the petrosphenoidal ligament by exudate.

A personal experience has taught me that an isolated paralysis of the sixth nerve of the side opposite the suppurating ear is suggestive of pressure from a cerebellar abscess, even in the presence of meningeal symptoms, as it is impossible for meningitis alone to cause sufficient pressure on the nerve itself, as it goes under the petrosphenoidal ligament, to cause an opposite sixth nerve paralysis.

When the cerrebellum is suddenly attacked by an exudate, I have seen a sudden and severe nystagmus, which rapidly disappeared.

Convulsive seizures or sudden localized paralysis which cannot possibly be due to an adjacent effusion are due to hemorrhages in the piarachnoid from disorganization of the blood. General cyanosis of the patient which is not occasioned by an impending rigor is a contraindication to operation, meaning, as it does, multiple septic infarctions of the lung, the result of a blood stream infection.

VESTIBULAR SYMPTOMS

I have seen absence of the reactability of the cold caloric from both the vertical and the horizontal in the presence of hearing, in contradistinction to the vestibular manifestation of increased intracranial pressure, in which, with absence of reactability of the cold caloric to the vertical canals, the horizontal canals still function. From this absence of all reactability to the cold caloric in two cases of meningitis, I am led to believe that the exudate in meningitis (which occurs in the finger-like prolongation of the cisterna pontis) is sufficient to

12. Whitnall: Anatomy of the Orbit, p. 335.

interfere with the artificial reactability of the vestibular portion of the nerve; but the stronger natural stimulus of sound is still transmitted by the acoustic. The vestibular reactability being more easily lost, in contradistinction to serous labyrinthitis.

TEMPORAL LOBE SYMPTOMS (APHASIA); NO INDENTATION OF FIELD

In one case with apparent naming aphasia, the absence of any heminopic indentation of the field allowed a diagnosis of meningitis, although temperosphenoidal lobe abscess had been suspected.

I have more than once seen a limited meningitis of the frontal region, following a fracture of the skull, manifested by euphoria, as evinced by the patient's insistence that he was "all right," although obviously profoundly sick.

In one case of *Streptococcus hemolyticus* meningitis following removal of the middle turbinate, it is noteworthy that there were no symptoms of basilar meningitis, no stiff neck, etc. The outstanding symptom was high temperature and psychic blindness without retinal changes, because the lesion was forward and attacked primarily the area adjacent to the frontal region of the base.

TREATMENT

From the foregoing considerations, what, then, are the anatomic, physiologic and pathologic indications on which a definite policy of treatment may be based?

1. Evacuation of the infected fluid while it is still limited to an area adjacent to the primary focus of infection in the ear or nasal sinuses, by surgically attacking the basal cisterna which directly communicates with this area. This must be instituted before the basal cisternae are plugged by exudate and the patient is dying from cerebral sepsis.

CASE 5.—*Fracture through base of skull.* J. K. had a discharge of a large amount of cerebral spinal fluid from the right ear. There was total deafness, and lateral nystagmus of left. Two days later the temperature was 104. The patient was wildly delirious, and had to be restrained. At operation a fracture was found running along the superior surface of the petrous pyramid. When the interpeduncularis cisterna was opened, from the floor to the middle fossa there was a discharge of a large amount of fluid, although there had been a continuous discharge of fluid from the ear since the accident. Subarachnoid irrigation was done from the interpedunculated cisterna of the occipital atloid and lumbar regions. The irrigation fluid returned in rapid drops. Examination of the fluid revealed *Streptococcus mucosus*. Recovery ensued, with total deafness and facial paralysis on the operative side.

2. The placing of the inflamed veins and infected subarachnoid spaces at rest, by ligation of the common carotid of the affected side.

3. Increasing, if we can, the immunity of the cerebrospinal fluid.

How can these three indications be best accomplished?

First, by the development of a surgical team that is qualified to carry out promptly and efficiently the highly technical, surgical and laboratory procedures necessary in each case.

The team, as now constituted, in addition to the chief operator, assistant, anesthesist and operating nurse, consists of two trained assistants, who have complete charge of all blood or other transfusions, and a highly trained bacteriologist and serologist, all of whom become a part of the machinery and have a responsibility, and consequently constant access to the patient from the moment meningitis is suspected until his death or discharge from the hospital; for our axiom must be: "If we are to cure meningitis, we must be two days ahead of the process, not one day behind."

PLACING THE INFECTED VEINS AND CISTERNA AT REST BY LIGATION OF THE COMMON CAROTID

Any limitation of infection presages rest. This is true in all the tissues, and especially true in infections involving the veins. It has long been known that a phlebitis of the extremities requires rest, muscular effort alone being sufficient to cause constant extension.

The internal carotid and its terminal branches within the cranium pass directly through the basal cisterna, at first alongside the cavernous sinus, one of whose walls is supplied by the carotid sheath, and its constant pulsation must contribute to the extension of the septic process in the basal cisterna as well as in the cavernous sinus. Consequently, during the last few years I have been ligating the common carotid on the side of the infection, thus hoping to put the basal cisterna, in which the meningitis is primarily located, at rest.

The ligation of the common carotid has not in my hands been followed by any bad effect, and it certainly makes all operative procedure much less difficult because of its great control of hemorrhage; and in cavernous sinus thrombosis, it has been, I believe, the definite factor in bringing two of these cases to successful issue after operation.

The ligation of the common carotid in three instances has had the effect of reducing the ocular tension of both eyes, for a considerable period after its performance.[13] This being the case, and as there is known to exist a definite relationship between the cerebrospinal fluid and the ocular tension, it is fair to assume that ligation of this internal carotid lowers the intracranial pressure as well. And a clinical observation in my cases would tend to substantiate this view.

CASE 6.—*Chronic discharge from ear.* J. K. had a sudden attack of intense pain in the head, followed by great dizziness. The left ear, which had previously functioned, was totally deaf. There was marked nystagmus of the right eye. The temperature was 103. The neck was stiff. The patient was profoundly ill. The pain in the head was agonizing. Lumbar puncture was done. There were 500 cells per cubic millimeter, mostly mononuclear. Next day the patient was much better, but still had pains in the head. On the second day there was intense pain in the head, vomiting and stiff neck. Lumbar puncture yielded cloudy fluid. The cell count was 2,000. Ligation of the common carotid was done; the labyrinth was exposed; the basal cisterna was opened directly behind the petrous pyramid, with discharge of a large collection of purulent fluid, which continued three days. The patient recovered.

Certain it is that, after the ligation of the common carotid and evacuation of the cisterna pontis, the cerebellum did not have the tendency to bulge through the operative wound that generally occurs, while in another case in the same region, we could obtain no fluid because of cerebellar pressure on the posterior wall of the petrous pyramid, although the common carotid had been tied and later it was discovered that she had an abscess of the cerebellum, the increased intracranial pressure resulting from which, of course, could not be influenced by any circulatory alteration.

If these observations are correct, then the ligation of the common carotid has a great therapeutic value in the treatment of meningitis; it certainly renders many of the technical surgical difficulties much easier in the con-

13. These are the only cases in which the ocular tension has been observed by a manometer.

trol of hemorrhage and the prevention of cerebellar herniation.

INCREASING THIS IMMUNITY BY TRANSFUSIONS OF IMMUNIZED BLOOD

It has been experimentally demonstrated that the cerebrospinal fluid system takes on a certain degree of local immunity in the presence of an adjacent infection.

It is this local immunity that makes puncture of the dura through an infected mastoid a comparatively safe procedure, although, when infective material is introduced into a normal subarachnoid space, general suppurative meningitis almost invariably results.

The local immunity of the cerebrospinal fluid differs, however, from that of the blood in that the immunity does not persist indefinitely. If the view is correct that the cerebrospinal fluid is simply a filtrate from the blood, then this immunity probably originates in the blood itself, in which case if we transfuse:

1. Immunized blood into a patient suffering from a beginning meningitis.

2. Blood immunized to the particular strain of streptococcus in the meningitis, this may enable the cerebrospinal fluid to combat the infection even after it has become general enough to show a few micro-organisms in the lumbar puncture.

CASE 7.—A. S. had irregular earache following influenza. Paracentesis was done. Five days later, there was a septic temperature ranging from 98.5 to 105 F. There was slight nystagmus on looking to the right, stiff neck and irritability. At the first operation the mastoid was opened, revealing streptococcus. Next day the temperature was 106, and the patient vomited continuously. There was clinical meningitis, continued high temperature, rapid pulse and slight stiff neck. Lumbar puncture yielded fluid under pressure. The cell count was 39; polymorphonuculears, 85 per cent.; diplococci in smear. Culture yielded *Streptococcus hemolyticus*. Blood culture was positive. At the second operation, ligation of the internal jugular, and of the common carotid was done; the sinus was opened. There was free bleeding; no clot; the sinus was thickened. Extensive removal of bone was done preliminary to entrance to the cisterna pontis. The patient was in such bad condition that the operation was terminated without opening the dura. Direct transfusion of immunized serum was done, and was repeated on three occasions. The patient recovered.

This we have tried to do by immunizing a number of professional donors from the streptococci found in cases of sinus thrombosis, or by the immediate immunization of a relative of the patient at the time of the primary operation, the blood from whom is successively transfused into the patient in variable amounts and times, depending on indications.

3. Evacuation of the infected fluid and its replacement by a warm and modified Ringer's solution: subarachnoid lavage.

The view previously expressed that the pathway can be kept open by subarachnoid irrigation is incorrect. In my previous reports I had irrigated from the frontal to the occipito-atloid and lumbar region. I am now of the opinion that the irrigation should be directed to the basal cisterna, as it is impossible to irrigate the vertex properly and as it is in the basal cisterna that the infection is limited, the effusion and exudates over the cortex being simply an overflow process, in the early stages largely protective.

I now believe that the irrigation in my previous cases was successful because it was associated with evacuation of the infected fluid in the area adjacent to the primary infection in the brain and cord; but that the replacement of a large amount of fluid in the system by irrigation was of great assistance, there can be no doubt.[14]

I now believe that the procedure should be guided by our present knowledge of the communications between the focus of infection and the part of the cerebrospinal fluid system first attacked.

When the labyrinth is the cause of infection, as the route is generally through the internal auditory meatus, the cisterna pontis should be opened, the fluid evacuated and careful replacement allowed, as Davis' postmortems have shown that "the cisterna cerebellomedullaris is but infrequently involved." Consequently, while the fluid from the latter area should be evacuated by an occipito-atloid and lumbar puncture, subarachnoid irrigation to the former may not be successful, although a large amount of fluid from both regions may be obtained.

When the infection is from a sinus thrombosis, entrance behind the sinus has allowed free irrigation in one case.

The entrance into the cisterna interpeduncularis or pontis is not difficult or bloody after ligation of the common carotid, as not only is the arterial bleeding negligible, but the intracranial tension is lowered and the venous return from the head is not disturbed, the three factors which most frequently occasion excessive operative bleeding.

TECHNIC

In basal-cisterna lavage, the fluid evacuated should be replaced by a warm Ringer solution, a needle being placed in the occipito-atloid region and another needle in the lumbar region. The occipto-atloid puncture must be in the lowest part of the body. This was demonstrated in a case in which fluid was recovered only on rolling the patient on his back. In my earlier irrigations I was worried that the amount of fluid injected might exceed the amount recovered, fearing that the excess would cause cerebral compression. In view of our present knowledge of the rapid absorption of the cerebrospinal fluid by the blood vessels from the spaces of the subarachnoid cisterna, no such accident is to be anticipated, provided, however, we do not so distend the spaces during the injection, thus breaking adhesions and traumatizing the delicate vessels running through them.

The irrigating fluid, consequently, should not enter under any pressure whatever, but simply by the force of gravity, the level of the intake fluid being only a few inches above that of the cisterna irrigated.

It is much better not to obtain any return flow through the occipito-atloid and the lumbar regions than to break down a process which has been successfully limited by the protective reactions of the leptomeninges themselves.

CASE 8.—S. W., had double mastoid six weeks before with irregular temperature. For the last three days there had been high temperature, vomiting and stiff neck. Lumbar puncture yielded fluid under pressure. The cell count was 3,200; there were streptococci. At operation, ligation of the common carotid was done, and opening of the cisterna pontis from behind the petrous pyramid. There was a discharge of a large amount of fluid. Subarachnoid irrigation of the occipito-atloid region was done. The fluid was recovered in rapid drops. This fluid was at first clear and then bloody, showing injury to the vessels from operation and overdistention of space. On removal of the cannula from the cisterna pontis, the fluid was under great tension. The irrigation undoubtedly was too high above the patient and had caused both hemorrhage and overdistention of space. The patient immediately became much worse, and died two days later. The first three tubes of washings recovered from the occipito-atloid regions contained streptococci in large numbers. The fifth, seventh and ninth tubes were sterile.

14. The statement in my last paper that by irrigation we removed a highly toxic exudate is also probably not correct, as injections of sterilized cerebrospinal fluid from cases of meningitis into the blood of animals has not caused toxic manifestations. We have not as yet injected such fluid into the subarachnoid space.

CONCLUSIONS

1. If we are to have any success in the surgical treatment of meningitis, we must abandon many of our preconceptions.

2. Our treatment of meningitis has, I think, been based too much on the principle of drainage, and our former classifications have been based too much on etiology.

3. We all operate in desperate terminal cases, in the hope that our diagnosis is incorrect, and that we shall find something that may be amenable to surgery. This is not a compliment either to our intellectual honesty or to our skill as diagnosticians. On the other hand, we hesitate to operate early, when there is a fair prospect of success, because we fear that our diagnosis is incorrect and the patient may have some other condition on which we shall graft a meningitis. This is a sad commentary on our knowledge.

4. Surgically, pathology and symptomatology should be the basis, for the only cases that offer prospect of recovery are those in which the infection is not virulent, and those in which it is more or less limited to one part of the cerebrospinal fluid system.

5. It is cases in the early stage, while the process is limited, with frequently but a small number or no micro-organisms and a small or a large number of cells in the fluid from the lumbar region that offer hope of successful treatment.

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ABSTRACT OF DISCUSSION

DR. GEORGE E. SHAMBAUGH, Chicago: I quite agree with the statement made by Dr. Eagleton that if one is going to have any chance to cure a case of suppurative meningitis one has to operate before suppurative meningitis develops; that is, while the process is well localized. I should like to emphasize one or two points in connection with the difficult clinical problems with which we have to deal in meningitis. In the first place, most otologists who have seen cases of meningitis in children, have incised the drum membrane, and the next day the meningitis has gone. Then there is a clinical picture suggesting meningitis in which there is a circumscribed disease of the mastoid, and brain abscess, and operation on the local focus clears it up and the patient gets well. The spinal fluid is cloudy, and yet that sort of case is one in which there has been a dissemination of some inflammatory products without a diffuse meningitis. Then we have a situation in which we do have a diffuse meningitis with all the clinical symptoms, and the patient recovers as the result of an operation on the local focus alone. We call that a serous meningitis. Between diffuse serous meningitis and diffuse suppurative meningitis, there must be all grades of difference. We cannot say that it is just one thing; and we have to rely, not so much on the clinical symptoms, as on the findings in the examination of the spinal fluid, and that is rather treacherous. For example, in patients who recover, we find that the spinal fluid can be very cloudy with a high cellular count. The funnel-like drainage of the fluid through the brain cavity allows precipitation of the cellular elements, so we have a high cellular count, and yet the patient does not have a diffuse suppurative meningitis. On the other hand, patients die of meningitis when the cellular count has been low all through and the postmortem shows the brain bathed in pus. Therefore, in a high cellular count alone we have not an entirely reliable staff to lean on. In cerebrospinal fluid examination, we can usually find a viable organism. Some say that if one finds a viable organism, there is diffuse meningitis that cannot get well. That is not true, not all cases in which a viable organism is discovered in a brain abscess or mastoid are diffuse meningitis. Unquestionably, we have a very serious problem in the diagnosis of diffuse purulent meningitis.

DR. JOSEPH C. BECK, Chicago: Five weeks ago I saw a case of meningitis in a boy who had been operated on for simple mastoid. He had frank symptoms of meningitis. Spinal puncture showed an infected fluid, although cultures had not been made. It seemed to be an infective general meningitis. I operated on that boy, did a radical mastoidectomy, and opened the labyrinth above from the semicircular canal to the promontory, and after a few days the patient began to get well. We are certainly indebted to Dr. Eagleton for what he is doing, for example, ligating the common carotid. That is something which may bring us a great deal of information. Is it not possible that some of the fibers of the sympathetic nervous system are caught up by the ligature and reduce intra-ocular pressure, as happens, experimentally, in glaucoma? I think that is a point that should be borne in mind.

DR. WELLS P. EAGLETON, Newark, N. J.: Possibly the reduction in intra-ocular tension may have been due to injury of the sympathetic, but I doubt it, because the common carotid is easily exposed.

TREATMENT OF SHOCK WITH GLUCOSE INFUSIONS AND INSULIN*

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AND
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Shock or exhaustion may be produced by various causes, such as fear, worry, trauma, physical injury, toxins, infection, hemorrhage, excessive muscular exertion, starvation and insomnia. The exact mechanism or physicochemical changes taking place in the production of shock are unknown. The theories explaining this are legion, and need not be detailed here, except to mention briefly that the blame has been laid to capillary distention, dilatation of the splanchnic vessels, fat embolism and absorption of toxins from traumatized tissues. Whatever the cause or mechanism may be, the clinical pictures seem to be identical. When we consider the histologic pathology of shock, we are on a little firmer ground. The organs of the body especially involved in shock are the thyroid, suprarenals, brain, liver and muscles. This constitutes, figuratively speaking, our kinetic system, which contains potential energy delivered as a result of environmental stimuli. Crile [1] has shown histologically, working with animals, that constant stimuli sent to the organs of the body involved in shock cause a hyperchromatolysis, and then a hypochromatolysis of the cells, or in other words, a state of exhaustion. He then showed this to be true on the brains of human beings who had died of infection and eclampsia. In other words, shock can be considered as the result of an intense stimulation of the kinetic system by physical exertion, emotion, trauma, toxins or anaphylaxis, which leads to physical changes in the kinetic system and which, if carried far enough, exhausts that system. The kinetic system continues to be activated so long as there is life, but normal activation does not produce exhaustion. The difference between normal processes and shock is one of intensity and not of kind.

The theoretical and laboratory aspects of this problem have recently been further studied by Levine, Gordon and Derrick,[2] working at the Peter Brent Brigham

* From the surgical service of the National Hospital.

1. Crile and Lower: Anoci-Association, Philadelphia, W. B. Saunders Company, 1915.

2. Levine, S. A.; Gordon, Burgess; and Derrick, C. L.: Some Changes in the Chemical Constituents of the Blood Following a Marathon Run, J. A. M. A. 82: 1778-1779 (May 31) 1924.

Hospital in Boston. They studied the changes in the chemical components of the blood following a marathon race and showed that a correlation existed between the blood sugar level and the physical condition of the runner at the finish. Those who had a normal blood sugar content showed no symptoms or signs of shock. Four runners who were markedly prostrated and, in fact, one unconscious, had very low blood sugar and presented the typical picture of an overdose of insulin with its attendant hypoglycemia.

With all this evidence before us, it readily becomes clear that, to combat the symptoms of shock rationally, we should devise some method whereby the body can be furnished with a substance that will give rise to an immediate supply of energy and maintain that supply so long as becomes necessary.

In two recent publications,[3] we described the specific action of glucose intravenously, and insulin subcutaneously in three cases of preoperative nondiabetic acidosis. Thalhimer,[4] a short time previously, reported the specific action of insulin and glucose in postoperative nondiabetic acidosis, and more recently [5] reported its specific action in the acidosis of the toxemic vomiting of pregnancy and eclampsia. The results were immediate and more certain than by the use of glucose alone. A preoperative or postoperative acidosis or eclampsia is, in a measure, a form of shock; and in view of the excellent response of these conditions to insulin and glucose, at the same time remembering Crile's [1] work, and that more recently done by Levine, Gordon and Derrick,[2] we felt that glucose intravenously and insulin subcutaneously should successfully combat exhaustion or shock and furnish the body immediate available energy. We very soon had an opportunity to try this method of treatment, and have treated ten cases successfully. The following cases are reported as being typical of the action of insulin glucose medication in our hands in shock:

CASE 1.—J. B., a man, aged 80, had the second stage of a two stage prostatectomy done. Just before the close of the operation, the pulse went to 170; respirations became shallow, with a rate of 38; the blood pressure fell, the pulse quality was weak and thready, the skin was cold, wet and clammy, and we realized that we were dealing with a case of intense shock. The patient was put to bed immediately, and given 1,000 c.c. of a 10 per cent. solution of glucose intravenously, and five minutes after the flow commenced, was given 15 units of U-20 insulin subcutaneously. The injection of glucose was regulated so that it took one hour for the complete flow, and at the end of this time, 15 more units of U-20 insulin was given. One hour after the final administration of insulin, the pulse rate and respirations began to fall, and at the end of four hours, the pulse was 96, and the respirations 24. The patient sat up in bed and felt no ill effects from the ordeal through which he had just passed. Urine examination at this time showed the presence of glucose, so 10 units of insulin was given; the next morning the patient was sugar free, and convalescence was uneventful. The result in this particular case seemed to be miraculous, and we can ascribe it to nothing else than the insulin and glucose.

CASE 2.—A. A., a man, aged 45, was operated on for periurethral abscess, accompanied by extravasation of urine and a deep seated perineal cellulitis. Three hours following the operation, the pulse had climbed from 110 to 160; the respirations from 26 to 38; the skin became cold and clammy; the respirations shallow, and the pulse volume poor. The temperature was 104.6 F. We assumed that we were dealing with shock produced by sepsis and trauma, and 1,000 c.c. of glucose was given intravenously and 30 units of U-20 insulin in two equally divided doses. Two hours following the administration, the patient began to react favorably, and nine hours after the administration, the pulse rate was 102; respiration, 26; temperature, 102.2 F.; the skin warm, and the general condition excellent.

CASE 3.—F. P., a man, aged 32, had an exploratory thoracotomy. Severe hemorrhage was encountered. The patient was returned to bed in intense shock. The temperature was 96.8 F.; pulse, 166; respiration, 38. The pulse was weak and thready, the skin, cold and clammy. One thousand c.c. of glucose and 30 units of U-20 insulin was given. This patient began to react within one hour, and eight hours later, the temperature was 99.2 F.; pulse, 100; respiration, 22; and he had completely emerged from the state of shock.

Previous to this time, we had been employing the usual measures in combating shock, such as glucose alone intravenously, the rectal drip, epinephrin, pituitary extract, heat to the body and the Trendelenburg position. The results at best were uncertain, and the time element was much greater. We attempted measures to support the blood pressure over long periods of time, but this was of no avail.

In shock, as in nearly all abnormal conditions, we have a state of perverted body metabolism, and the body cells cannot metabolize introduced carbohydrate as quickly or as satisfactorily as in an individual with normal metabolism. In addition to this, the entire system is in a state of exhaustion, and to overcome it, a source of energy is needed which will readily give up its energy to the dying cells. Glucose administered alone cannot always do this satisfactorily or quickly enough. We know definitely, as a result of the experiments carried out by Ringer [6] that insulin oxidizes glucose; hence the introduction of the insulin causes a rapid oxidation of the introduced glucose supplying energy so sorely needed. Since time is always an important factor in the treatment of shock, the tremendous advantages of insulin and glucose over glucose alone can readily be appreciated. The physiologic background of the action of insulin and glucose in shock is the same as that in preoperative or postoperative nondiabetic acidosis, or in the toxemic vomiting of pregnancy and eclampsia. We [7] have previously shown the tremendous advantage of insulin and glucose in the former conditions. Thalhimer [5] has done so in the latter conditions, and we feel that further independent clinical investigations will confirm these findings in the treatment of shock. Which of the two factors, insulin or glucose, is the more important it is difficult to say; however, the combination of the two seems to be specific.

The value of this method of treatment has recently been confirmed by Ginsberg.[8] He treated a boy, aged 11, suffering with a left Pott's fracture, and contusions of the chest and abdomen. The day after the injury, the patient vomited incessantly and went into shock. The pulse ranged from 130 to 140, respirations from 50 to 55, and the temperature was 100 F. Examination of the urine at this time showed sugar to be present, acetone four plus and diacetic acid four plus; the blood sugar was 325 mg. Eighteen units of U-20 insulin was given in the morning, and 200 c.c. of 10 per cent. glucose intravenously. The boy ceased vomiting imme-

3. Fisher, David; and Snell, M. W.: Insulin Treatment in Postoperative Nondiabetic Acidosis, Wisconsin M. J. **22**: 220 (Oct.) 1923; Insulin Treatment of Preoperative and Postoperative Nondiabetic Acidosis, J. A. M. A. **82**: 699-700 (March 1) 1924.
4. Thalhimer, William: Insulin Treatment of Postoperative Nondiabetic Acidosis, J. A. M. A. **81**: 383 (Aug. 4) 1923.
5. Thalhimer, William: Insulin Treatment of the Toxemic Vomiting of Pregnancy, J. A. M. A. **82**: 696-699 (March 1) 1924.
6. Ringer, M.: Influence of Insulin on Phlorhizin Diabetes, J. Biol. Chem. **58**: 483-501 (Dec.) 1923.
7. Fisher and Snell (Footnote 3, second reference).
8. Ginsberg, George: Use of Insulin in a Case of Acidosis Following Trauma, J. A. M. A. **82**: 1517 (May 10) 1924.

diately. At 3 p. m. the urine was entirely negative. The next morning the boy had fully recovered. In this particular case, there evidently was a sudden serious derangement in the carbohydrate mechanism of the body, due to some unknown factor associated with the trauma, complicating the accident; for on close questioning of the parents, no diabetic symptoms could be elicited, and the sudden recovery and lowering of the blood sugar to normal, and maintaining it at normal in the face of a diet rich in carbohydrates, shows this to be the case. Thus, a condition extremely serious and progressing rapidly was immediately transformed to normal convalescence by the use of insulin and glucose.

TECHNIC OF ADMINISTRATION

A sterile, chemically pure solution of glucose is used, preferably of 10 per cent. strength; 500 or 1,000 c.c. may be given, depending on the severity of the condition to be treated. The usual sterile precautions are taken as in other intravenous medications. The solution is allowed to flow into the veins at a very slow rate, so that at least one hour is consumed from the beginning to the end of administration; the longer the time, the better. The amount of insulin to be used depends entirely on the amount of injected glucose. For every 3 gm. of injected glucose, one unit of U-20 insulin should be used; and if H-20 insulin is used, one unit for every 2 gm. The total amount of insulin to be given should be divided into two equal doses, one part given five minutes after the beginning of the glucose administration, and the remainder at the end of the administration. So long as glucose appears in the urine, one need not fear an insulin reaction, for this acts as a safety guide and shows that there is more glucose present in the blood stream than can be taken care of by the introduced insulin. This glucose can be driven off by the injection of a small additional amount of insulin. Since glucose has a diuretic action, and tends to deplete the body tissues of fluids, it is our custom to give at the same time fluids by rectum or hypodermoclysis.

This whole question of insulin in nondiabetic conditions was summed up aptly in a recent editorial.[9] Speaking of the conditions reported as being amenable to insulin and glucose, the editor continues:

> More prompt success has been reported by Thalhimer, and by Fisher and Snell through the combined use of insulin hypodermically and glucose intravenously. It is far too early to generalize broadly from the few successful treatments recorded; but there is sufficient background to the project of testing the curative powers of insulin-glucose treatment for pernicious vomiting and other comparable conditions to warrant giving it careful consideration. The procedure is not free from some element of danger that should not be minimized. Insulin therapy demands care in the case of the diabetic patient; doubly great is the need of intelligent precaution with the nondiabetic patient.

SUMMARY

1. In three cases, insulin subcutaneously and glucose intravenously caused a rapid cessation of the typical clinical symptoms of surgical shock, much more rapid and certain than by any previous methods heretofore tried.

2. Independent clinical investigations along these lines are desired in order to place this method on a firm clinical basis.

National Home.

9. Insulin and Ketosis, editorial, J. A. M. A. 82: 1695 (May 24) 1924.

THE CONSERVATIVE TREATMENT OF THE BONE INJURY IN COMPOUND FRACTURES *

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If orthopedic surgery is to contribute anything to the present treatment of fractures, it will be in the direction of greater conservatism in the use of open operations, and in the advance of the use of more perfect methods for the external or closed (mechanical) reduction and fixation of fractures. Accurate manipulative reduction, splinting and extension is a fine art which is not to be replaced by the scalpel, bone plate or bone clamp.

Operative intervention in closed fractures is at all times a hazardous and difficult undertaking; volumes have been written, and endless surgical debates are still going on, as to whether it is indicated or justifiable except in unusual cases; but for the purpose of this paper this subject must be left in statu quo.

In compound fractures, three additional factors are introduced of such vital import as absolutely to contraindicate, to my mind, all immediate operative intervention on the fractured bone ends. These are, (1) the injury to the soft parts; (2) the introduction of infection, either at the time of injury or in the subsequent manipulations, and (3) the extensive interference with the circulation. These factors have not always been properly evaluated, or we should not be given the printed advice [1] that "only cases exhibiting puncture wounds made by the thrust of the bone through the skin (indirect violence) are to be treated conservatively" or that of R. J. Cook and W. O. Sherman, that complete débridement gives the best and quickest cures in all compound fractures.

In an analysis of the problem of the immediate treatment of compound fractures, it must be agreed on that there are at least two vital factors: first, the injury to the soft parts; second, the injury to the bones. If the soft part injury is so extensive and so severe that the fracture is merely an incident in the crushing and mangling of the limb, then the case falls out of the category of "compound fracture" and should be treated from the standpoint of the mangled limb alone; and it is entirely inconceivable that any operative intervention on the bone could be helpful, except possibly the removal of small fragments ground up in the soft tissue and entirely loose and free from the mantle of the periosteum.

When the injury to the soft parts is less severe than the foregoing the immediate treatment of the osseous injury can be advantageously begun, and it is my opinion that the strictest conservatism, the avoidance of all operative measures on the bones and the reduction of all manipulations to an irreducible minimum, followed by accurate splinting and absolute immobilization for a period corresponding at least to the danger period for possible infection, will be followed by the least infection, the least interference with the blood supply, the least number of cases of osteomyelitis and nonunion, and the best and quickest recoveries.

The soft part wounds must be treated from a rational standpoint; too much suturing and too much handling

* Read before the Section on Orthopedic Surgery, at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. As in the Massachusetts General Hospital Outline Treatment of Fractures, 1923.

will cause the damaged tissues to break down. In fact, besides hemostasis, the cleansing technic to be described, and the anatomic rearrangement of the parts, only a few sutures should be used, and the muscle bellies and the fascial planes should not be tightly sutured.

I am fully in accord with the principles of the treatment of the soft part injuries as formulated by T. Turner Thomas,[2] though I diametrically oppose Thomas in his recommendations for operative fixation of the bone fragments, in which Thomas employs plates, screws, wires and nails.

The cleansing technic that I employ is that recommended by Thomas: "The surgeon is gowned, masked, and gloved as though for a major operation. The limb, which has previously been shaven, is thoroughly cleansed with ether on a sterile sponge held with a sponge holder. The parts are draped with sterile sheets and towels, and the skin and wound painted with a 7.5 per cent. tincture of iodin, followed by alcohol. With a small sterile sponge on a hemostat, ether and tincture of iodin are carried to all parts of the wound, and the excess of iodin removed with alcohol. The protruding ends of the bones are also thoroughly cleansed with iodin, alcohol and ether, and then, with gentle traction and manipulation, are reduced." When the opening of the skin is not large, and difficulty is experienced in reducing the fragments, it is inadvisable to shove them back with a blunt instrument or the gloved fingers. It is better to enlarge the skin wound with a pair of scissors (the other tissues being separated when necessary by blunt dissection by spreading the scissors open in the wound) until manipulation and traction are effective in reducing the fragments, after which the skin is to be loosely closed, enough space between the sutures being left for this escape of wound secretions into the dressings.

Débridement, as is generally understood, is (and admittedly has been) a rather dangerous procedure and can easily be overdone. Few are so gifted with surgical clairvoyance that they can inspect the tissues of a crushed wound and truly predict which tissues will live and which will die. It is best, therefore, to refrain from excising any but the obviously totally devitalized tissues, a condition not at all frequent in our experience in the usual compound fracture. It is more than a coincidence that in seven years' experience as chief of the orthopedic service in charge of fractures in a 250 bed, general hospital in a large industrial, automotive and railroad center (the orthopedic service at the Mount Sinai Hospital, Cleveland, has complete control of all fractures, both simple and compound, except the more severely crushed and maimed limbs, which are treated in conjunction with the surgical service) that I should see few cases in which typical or extensive débridement was indicated.

CASE 1.—J. C., a boy, aged 8, was run over, March 18, 1924, by a heavy truck, and received a most severe crushing of the lower third of the leg, with a compound fracture of both bones. The skin wound entirely circled the leg; the soft tissues were most severely crushed and apparently devitalized. Before deciding whether to turn the case directly over to the surgical department for immediate amputation, the resident called the junior orthopedist on fracture service, who decided against amputation. Together with the junior surgeon on emergency service, he patched up the soft parts with as few stitches as possible; in one place they had to leave a skin gap of at least 1½ inches over the tibia, on account of the condition of the circulation in the skin flap. No débridement was attempted. The foot was blue and cold. The leg was placed in a pillow splint trough (not closed or strapped) and an electric light bath was used to heat the foot, while the exposed bone was shielded from the heat and kept moist with a saline drip. No ice tongs could be used on the os calcis for immediate extension, on account of the poor circulation of the foot. The foot lived, the crushed tissues regained their vitality, did not break down or slough, and on the sixth day all immediate danger was over. There was considerable oozing from the wound, but no infection. The tibia was now covered by mobilizing the skin above and below the gap and suturing with silkworn gut. Electric light heat was now used on the entire limb and extension applied to the lower fragment. April 22, the wound was entirely healed. There were no fistulas and no oozing. April 25, a roentgenogram showed fair callus, with some shortening and overlapping; June 1, the callus was firm and the patient was walking with excellent function.

It is my firm conviction that any more extensive operative or manipulative intervention with the fracture during the first week would have resulted in gangrene and amputation.

Instead of advising débridement as the treatment of the soft part wounds,[3] any advice to be broadcast to the profession at large should read, "Remove as little tissue as possible and always remember that the worst looking and most thoroughly crushed tissues may still be viable."

After the reduction of the fracture and the closure of the skin, the wound is to be covered with sterile dressings and the limb securely immobilized. I prefer immobilization in the modern extension splints where practicable, but immediate fenestrated plaster casts and properly constructed pillow splints have their appropriate place. The patient is then placed at rest—complete quiet and absolute bed rest, which is to be maintained by sufficient opiates and sedatives to keep him from threshing about and putting any strain whatsoever on the immobilization. The value of complete rest and quiet to prevent and combat infection and hasten recovery has of late years not had the recognition it should receive. (I am old fashioned enough to believe that Hilton's book on "Rest and Pain" is still a classic.) Moderate rises in temperature, when not accompanied by other signs of septic infection, need not cause alarm. Properly controlled blood counts are helpful in determining the meaning of fever during the first week.

The sedative treatment is to be continued for at least a week, when the immediate danger of infection from the primary injury will be over, after which the further treatment for the healing of the wounds and the complete reduction of the fracture can be undertaken as indicated.

Roentgenograms should always be taken in bed, without turning or disturbing the patient (the bed should be either rolled to the roentgen-ray room, or a good portable apparatus taken to the bedside). In these modern days of mobile units, 5 ma. radiator self-rectifying tubes and the double screen technic, there is absolutely no excuse for lifting a patient with a fresh compound fracture from the bed to the cart, the cart to the roentgen-ray table and back again, in order to get satisfactory roentgenograms. It is better to do without roentgenograms during the first week rather than submit the patient to excessive handling.

CASE 2.—A. G., a boy, aged 11, July 4, 1920, received a compound fracture of the tibia by falling from a chair. There

2. Thomas, T. T.: Primary Closure of Wound Without Drainage in Usual Compound Fracture of Leg, J. A. M. A. **79**: 453 (Aug. 5) 1922.

3. Cook, R. J.: Results of Treatment Following Compound Bone Fractures Occurring in Civil Life, J. Bone & Joint Surg. **6**: 95 (Jan.) 1924. Sherman, W. O.: Compound Fractures of the Femur and Open Fractures into Joints, ibid. **6**: 344 (April) 1924.

was only a small puncture wound of the skin over the tibia to one side of the median line. He was taken to a nearby hospital, where the wound was scrubbed and the iodin technic employed. An attempt was made to reduce the fracture, after which it was firmly held in a pillow splint. (So far so good.)

July 5, in the morning, the boy was lifted from his bed to a cart, thence to the roentgen-ray table, and back to bed again. He complained later of having had pain on being moved. The position of the fragments being unsatisfactory, as shown by the roentgenogram, he was later placed on the cart again and taken to the operating table, where a second manipulation was performed.

July 6, in the morning, the process was repeated, except that the third manipulation was made under the guidance of the fluoroscope.

July 7, in the morning, he was again taken to the roentgen-ray room on the cart; and the roentgenogram now showed "complete satisfactory reduction of the fragments." That night the lad had a fever of 104 F. and a pulse of 140. The next day he was taken to the Mount Sinai Hospital, where the severely infected wound was enlarged and a considerable amount of bloody pus evacuated and the Carrel-Dakin technic instituted. Osteomyelitis followed.

This lad had at least twenty more transfers from bed to cart, roentgen-ray table, operating table, etc., with its necessary handling of the fractured limb, etc., than he would have had, had the precepts laid down in this paper been observed.

As far as the bone injury is concerned, outside of the treatment already spoken of, it is to be left severely alone. It is my firm conviction that, the less immediate operative intervention on the fractured bone itself in the neighborhood of the fracture or distal to it, the less likelihood there will be of infection setting in, or of interference to the distal circulation; and that the less manipulation and violence to the injured part either during the initial treatment or during the first week, the greater will be the resistance of the bone to infection and the higher percentage of noninfected compound fractures.

I will report only a few typical examples of the many cases of infected compound fracture that I have seen following immediate operation done at other hands:

CASE 3.—F. L., a man, aged 36, received a compound fracture of the tibia by indirect violence. He was taken to a first class hospital, where a Lane plate was applied as a part of the first aid by a surgeon who prides himself on following Lane's technic down to the most painful details. Infection and osteomyelitis followed on the third day.

CASE 4.—E. S., a man, aged 35, received compound fractures of both femurs through indirect violence. Both skin wounds were not more than punctures. On one side there was a long, oblique fracture, and the proximal fragment was sharp and the skin wound so small that the bone could not be reduced by manipulation. It was therefore sawed off. On the other side, the fracture was transverse; the wound was enlarged and the femur was plated. Infection of both wounds followed; a fatal outcome resulted after three months.

CASE 5.—L. M., a man, aged 56, received an oblique fracture of the femur by indirect violence. The skin wound was very small, but this was enlarged and the fragments wired; a Thomas splint was applied. Infection followed on the fourth day. When I saw the patient at the end of the second week, the thigh was riddled with pus pockets and the patient was in a septic condition. Amputation finally had to be resorted to.

Many cases could also be cited to show where infection was incited and kept up by the immediate and persistant drainage of the wounds of compound fractures. The chief surgeon of one of our major steel corporations has given orders that "all compound fractures are to be treated as potential infections," and are either to be drained at once or the Carrel-Daken treatment begun at once and continued. I have the word of the industrial surgeons of this organization, working in my vicinity, that the compound fractures under this treatment usually have infected persisting sinuses and fistulas, in contrast to the compound fractures which they see treated by conservative methods.

At the Mount Sinai Hospital, Cleveland (a general hospital in an industrial city of one million inhabitants, which draws its emergency cases impartially from the railroads, factories, building trades and the streets), where during the last six years all fractures have been assigned to the orthopedic department, we have admitted to the wards more than 1,500 fractures, of which 9 per cent. have been compound.

Our practice during this period (with but one regrettable exception) has been to treat the bone nonoperatively, as has already been outlined, and a careful perusal of the hospital records to date proves conclusively that, up to the present writing, we have never yet lost a limb or a life from septic infection; we have had but one nonunion as the result of any osteomyelitis, and we have not had many cases of undue overlapping of fragments or regrettable deformity or shortening from this conservative, nonoperative treatment. The wounds in these compound fractures thus treated speedily close, and only in rare instances do they secrete and ooze for a considerable length of time (over four weeks), and it is only in the rarest instances that they become the seat of severe infections; and if a small amount of pus does burrow its way beneath the closed tissues, it has given far less trouble than when the wounds are otherwise treated.[2]

All the amputations were done for gangrene (one gas gangrene). No death was due to septic infection.

CASE 6.—E. G., a man, aged 40, injured in a motorcycle accident, had severe laceration of tissues of the leg, with fracture of both bones and a great deal of splintering and overlapping of fragments. The circulation of the foot was impaired, but not distinctly bad. Against our better judgment, we were persuaded to insert a Steinman pin through the os calcis in order to control the overlapping with traction and the leg was put up in a Thomas splint. Within a week, the entire heel became gangrenous, and an amputation had to be performed just above the area of the compound fracture, where the wound was doing very well and there was no infection of the fractured bone ends. The gangrene was due to the use of the Steinman pin alone.

In this case, we violated our own precepts and now do not feel justified in using Steinman pins or ice tongs in any case (open or closed) in which the circulation distal to the fracture is impaired.

CASE 7.—E. B., a man, aged 62, slipped a leg through the rungs of a ladder and hung head downward for a few minutes, breaking his leg, as in an osteoclast. He then slipped to the ground. There was a compound fracture of the tibia with a fairly long, circular skin wound, which was loosely stitched over the calf muscles. Severe bruising of the skin both above and below the fracture was noted. The wound was swabbed with iodin, and the leg was placed in a pillow splint. For a while, the patient's general condition was poor, and a marked general arteriosclerosis with myocardial degeneration was noted. In a few days, the patient's general condition improved. Within a week, a very large area both above and below the fracture became gangrenous and did not show any distinct line of demarcation. There was a slight fever and leukocytosis. A general consultation favored amputation as the best treatment. The compound fracture was found free from purulent infection.

CASE 8.—Mrs. H., aged 42, had a leg crushed between a wall and a heavy automobile, resulting in a compound fracture of the upper third of the tibia. The circulation distal to the fracture was very bad, but it was decided to try to save the limb, and conservative cleansing and splinting were employed. On the third day, the part of the leg distal to the injury was gangrenous and had to be amputated.

CASE 9.—J. K., a man, aged 65, was hit by a speeding automobile, and received fractured ribs, a fracture of the skull, and a compound fracture of the femur. He also had arteriosclerosis and chronic myocarditis. The skin of the thigh was merely punctured by the bone, and the wound was thoroughly cleaned up and the leg put up in a Thomas traction splint. He was turned over to the surgical and medical services for the treatment of the fractured skull and ribs and for a bronchopneumonia which came on soon after his admission to the hospital. He apparently recovered from his bronchopneumonia, but the fever (at no time very high) persisted; at the end of the fourth week there was still some secretion from the thigh wound, but smears showed only a moderate number of bacteria to each microscopic field, and a moderate leukocytosis. Suddenly a high fever developed, and both medical and surgical consultations did not reveal any particular cause for the fever and general condition; as the man was evidently not going to recover, it was decided to amputate. This was done under spinal anesthesia in a few minutes. The patient withstood the operation wonderfully, but careful examination of the specimens proved conclusively that amputation was ill advised and unnecessary. There was no purulent infection. The patient died eight days after the operation. The coroner's necropsy report reads: "amputation, fractured skull, fractured ribs, arteriosclerosis, chronic interstitial nephritis, myocarditis, and a purulent bronchopneumonia of long standing," which latter was overlooked.

One case of gas gangrene developed in our series of compound fractures:

CASE 10.—G. H., a man, aged 42, was caught between two moving automobiles, and received a compound fracture of the femur, which was treated conservatively. The leg was put up in a Thomas splint. On the third day, the patient had a high fever, rapid pulse and his face was flushed, but he felt unduly happy and elated and had little or no pain. Warned by our experience in the case which is next quoted and which had happened only a short time before, the suspicions of the resident were aroused and he immediately removed the dressings, pressed on the wound, and found a few bubbles of pus. Immediate amputation followed. The patient recovered. Welch bacilli were recovered from the wound.

To offset any imputation that this infection should be charged against the conservative treatment (as does Cook[3]), the following case of gas gangrene is reported because it was not a case of compound fracture:

CASE 11.—E. M., a man, aged 51, a laborer, had a thigh severely bruised and crushed in an excavation cave-in. A closed transverse fracture of the thigh resulted. There was no skin wound on the thigh. The fracture was treated with extension in a Thomas splint. The thigh became badly discolored and swollen; the pulse and temperature went up, which, however, was attributed to a bronchopneumonia from a possible crushing of the chest. The patient did show a few signs of bronchopneumonia. This was the first of the two gas gangrene cases, and the symptoms of mental excitation and cheerfulness did not direct the diagnosis into the proper channels, because nowhere on the patient's leg or thigh was there a skin wound of more importance than a mere abrasion. Finally, skin crepitation was elicited in the swollen thigh; an immediate amputation with laying open of all the fascial layers of the thigh and injection of hydrogen peroxid did not save the patient.

Nonunion (six months' period) has occurred only once, but delayed union—three or four months—has not been infrequent. To our knowledge, only one case has come to operation for delayed union:

CASE 12.—M. W., a man, aged 24, admitted for a compound fracture of the lower third of the humerus, was treated conservatively; the arm was placed in extension in a full Thomas arm splint, which was later modified so that the elbow could be flexed. Oozing persisted for eighteen days, after which the wound closed. At this time, the patient could grasp the handle of the L which kept his elbow at right angles, and no musculospiral paralysis was noted. In the fourth week, at his own request, the arm was put up in a plaster cast (body and arm) to enable him to travel, which he asserted was necessary so that he might retain his position with a factory in Kentucky. Instead of reporting for treatment in Cincinnati, I am informed that he went directly to Wisconsin, where the cast was removed; a short time later, both a bone graft operation and a musculospiral neurolysis were performed at Rochester, Minn. I am informed by the Mayo Clinic that the bone ends were not infected.

Four serious infections occurred under our care, but the first two to be recorded cannot be used to indict the efficacy of the nonoperative treatment, as this could not be employed in the manner already advised.

CASES 13 and 14.—C. A., a man, aged 24, and G. B., a man, age 22, were injured in the same motorcycle accident, and their compound fractures badly contaminated. They were not brought to the Mount Sinai Hospital until more than twenty-four hours after the accident, and for some reason not assigned to the orthopedic service and cleansed for another twelve hours. The wounds, one a compound fracture of the femur, just above the knee, the other a compound fracture of the middle third of the tibia, with the soft parts of both badly lacerated and contaminated with dirt, were cleaned up as thoroughly as possible, and cigaret drains inserted. Both wounds became badly infected, especially the thigh wound, which had to have at least four operations for the draining of pus pockets and the removal of a couple of loose bone fragments before it could be controlled. Neither of the patients had completely closed wounds or union at the end of three months. Both were fitted with ambulatory braces, and urged to walk, but were discharged to their respective homes in neighboring cities at their own request. The tibia wound soon closed, and firm union occurred in seven months; the thigh wound had to have another pus pocket opened; the fistula closed in five months, and the femur was firmly healed by strong callus in nine months. Two years after the accident, reexamination showed both with excellent union, large, firm calluses, and little or no disability, except that full flexion of the knee was not possible in the thigh case.

CASE 15.—J. W., a man, aged 38, came under treatment for a compound fracture of the thigh through indirect violence. The skin wound was 1½ inches long; it was thoroughly cleaned and the fracture was reduced and immobilized in a Thomas splint. There was a slight rise in temperature on the fifth and sixth days, which was attributed to an infected wound of the cheek and lips. At the end of the third week, the thigh wound began to discharge pus, which came from a pocket higher up in the thigh. This was controlled by irrigations of surgical solution of chlorinated soda (Carrel-Dakin solution), and was later drained by fitting the patient with a plaster cast and having him assume the upright position. Callus formed, the amount of purulent discharge gradually decreased, and the patient was fitted with a Thomas walking splint. There was a good callus at the end of fourteen weeks. June 1, 1924, the wounds were healed, there was firm callus, and the patient was discharged wearing a Bradford abduction hip splint.

CASE 16.—L. V., a man, aged 26, May 8, 1924, received a compound fracture of the left tibia by indirect violence. There was considerable oozing, which was not deemed excessive, and was controlled by pressure. On the third day, he developed a fever of 103 F. with pulse of 108 and a leukocyte

count of 10,500. The patient was restless and at times delirious, symptoms which impelled us to enlarge the wound, express the blood clot and institute irrigations with surgical solution of chlorinated soda. Smears and blood cultures showing streptococci, intravenous injections of gentian violet were given. A severe reaction followed the first injection, the temperature going as high as 105 F., and the pulse 140. Phlebitis of the thigh followed. The patient was given local treatment and four intravenous injections of gentian violet. By the eleventh day, the fever had subsided, all tubes were removed and extension begun with a Sinclair skate; June 1, the patient was making satisfactory progress and callus was already demonstrable in the roentgenogram. By June 10 the phlebitis and fever had subsided, and the skin wound was almost healed.

Compound fractures of the phalanges, which are notoriously bad because of the crushing they entail and the damage to the skin and tendons, are treated by our staff as conservatively as possible, but are not included in the discussion in the paper.

SUMMARY

The best results from compound fractures I have seen have been from cases in which, after the field has been thoroughly prepared with ether and iodin, the soft part wounds have been loosely sutured and the skin closed over; in which the fractured bones have not been unduly manipulated or subjected to surgical operations of any kind whatever, and in which the fracture was securely immobilized and the patient kept quiet and at complete rest until all the danger from infection was over.

The worst results I have seen—infection, osteomyelitis, nonunion and death—have been in cases in which, as a part of the immediate treatment, the bones have been plated, wired, screwed, resected or otherwise operated on or unduly manipulated.

After a fracture has once been cleansed and put up in fixation, complete rest and quiet is the best means of preventing and combating latent infection. Compound fractures thus treated are "potentially clean," and should not be drained.

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ABSTRACT OF DISCUSSION

DR. T. TURNER THOMAS, Philadelphia: Dr. Stern's conservative treatment of today was the radical treatment of yesterday. The time is not far distant when the fear of infection in the common type of compound fracture will largely have disappeared. Some form of disinfection added to the best available asepsis, and the least manipulation of the tissues necessary for the perfect immobilization of the fragments, are the requirements most needed. A dependent position of the wound, with free spaces between the sutures for easy escape of the wound fluids, is an important advantage. I fully approve Dr. Stern's position concerning débridement. I have little concern for infection in these cases, but a great deal for mobility of the fragments. Loosening of the screws, in my opinion, is not due to necrosis from infection but to the great strain on the fragments, the plate and the screws, from muscular contraction. The frequent lifting of the plate from the bone, its frequent bending and not infrequent breaking, are best explained in the same way. I am confident that many wounds break down that would have remained clean if the fragments had been perfectly immobilized. But perfect immobilization of the fragments is a much bigger problem than has been thought. The only difference between Dr. Stern and myself concerns this phase, which needs much more discussion. Only results are convincing.

DR. KARL A. MEYER, Chicago: Being in surgery, and being superintendent of the county hospital, I should prefer that the fracture cases in that institution be treated by the orthopedic men. The reason for this is that there are few general surgeons who are interested in the treatment of fractures. When I entered the institution about ten years ago, compound fractures were left to the intern or resident service, and we could never be proud of our results. However, of late the fracture cases have been under the care of one or two surgeons who are interested in this line of work, and the results are much better than they were before. Cases not debrided are the cases that are not severely compounded, and most of them are treated by alcohol dressing or some form of splinting. Eighty-five per cent. of these cases remained clean, 13 per cent. and 1.5 per cent. were very severely infected, and one of those cases was a case that for eight days got along very well with practically no infection. After a period of a week or ten days the intern decided to manipulate that patient, and if there is one result Dr. Stern has brought out it is certainly in relation to manipulation of these compound injuries. The less manipulation, the fewer chances of infection. Forty-two patients who were not debrided again were treated conservatively, and fourteen remained clean.

DR. R. H. MCKAY, Akron, Ohio: To my mind, the radical treatment of anything is the treatment that is giving Nature the greatest assistance in recovering its equilibrium. As Dr. Thomas has led us to believe, the chief purpose in the end-result is function. To be sure, to get function there must not be much deformity; nevertheless, function is the chief thing. The only object of early accurate diagnosis in these cases is early accurate apposition. A fractured bone is a thing requiring weeks and weeks for recovery. It requires days and days before the process of ossification starts. So there is no hurry in roentgenographing that patient in the first week of his injury. There is only one thing I can think of that roentgen-ray examination early may do: it may stimulate the curiosity of the surgeon and get him to operate a little quicker, too quickly. Nature's method in healing bone is not very different from healing elsewhere. Excessive manipulation induces infection by breaking down, making a rent in the line of defense. Ransohoff once said that the greatest cause of death in appendicitis was the surgeon's curiosity, and I think that is true here, too.

DR. EDWARD J. LEWIS, Chicago: I want heartily to second Dr. Stern in his plea for conservative treatment of the bone itself in compound fractures. Interference, in the form of local fixation, is, I believe, harmful in the great majority of cases. In the Cook County Hospital, we are specialing our compound fractures, putting them with all our simple fractures in one ward. A number of surgeons are devoting most of their time to these cases. They are general surgeons, not orthopedic. We believe that differences of opinion as to the best method of handling compound fractures have been, in the past, largely due to the failure to classify the varieties. We believe that where the injury to the soft tissues is exclusively from within (where the wound is small and no bone protrudes), where no gross contamination has occurred, where no one has put in a probe or other instrument, we can practically regard these so-called compound fractures as simple fractures. We can ignore the depth of the wound. The simplest cleansing of the surrounding skin, the application of a dry dressing, or perhaps 50 per cent. alcohol dressing is all that is necessary, and immobilization and further handling is almost identical with that in simple fractures. In the classification of compound fractures we find, in our rather large series of 235 or more cases, at least 40 per cent. come into the group I have described above. We find, at the other end of the scale, that there are compound fractures which are really crushing injuries. Even if we do obtain a clean healing of soft tissues, it is generally a waste of time and useless to try to save a functionless extremity. These are primary amputation cases. We are doing fewer primary amputations than we did in the past. The time is coming when we shall do still fewer. In any discussion of methods of treatment, we must recognize the large group which are for practical purposes simple fractures and the primary amputation group. Between these two extremes are the cases in which conservative surgery or débridement has its place.

We have an unusual opportunity to study the results of the various kinds of treatment in compound fractures. The reason for this is that, until the past year, these cases were admitted in rotation to the surgical services of various men, and there are sixteen services and each of these men has had his proportion of these cases. Moreover, there have been a great many interns who have had the first handling of the cases on entrance. There has been much difference of opinion, a great variety of treatments, and it is on the basis of this study that we are able to reach conclusions. The cases are mostly severe injuries—automobile, "run over by wagon," or "crushed between motorcycle and street car," and so on. We find cases that have been treated with tincture of iodin and by local cleansing, some cases by pouring the iodin into the wound, of which I disapprove. Some cases have been treated by ordinary cleansing and immediate suture, sometimes in the ward and sometimes in the operation room; and lastly, others by careful débridement by a member of the staff. The group of more severe cases makes up about 60 per cent. of all our compound fractures. More than half of the total cases in this group have been treated by débridement, most of them in the last eighteen months. Comparing the debrided cases with those of a similar soft-tissue injury but treated by the other methods of cleansing mentioned, the complication of deep infection has been reduced from 57 per cent. in the nondebrided cases to 23 per cent.

DR. G. D. MARSHALL, Kokomo, Ind.: I think that a few things often are overlooked which confuses in the treatment of fractures. There is one thing we can do in fractures below the knee: tenotomize the Achilles tendon. That is an advantage to the patient, as the muscles are not in spasm and he does not have pain while he is undergoing treatment. Another thing is that the anterior superior spine of the ilium and the internal malleolus have remained practically fixed, bony points for many years. Tape measures are cheap and not very heavy to carry, and if a person will remember these things he will not have to have cases roentgenographed so often. I think that the best work in British hospitals was done by a man who was not considered particularly brilliant. He had a tape measure in his pocket, and with the Thomas splint properly applied, and attended to, I think that is the solution. After a fracture heals in six weeks, the bone is still soft, and one should put on a walking caliper and protect against deformity until sufficient osseous deposit is formed to bear the weight; then there will be a good end-result.

DR. WALTER G. STERN, Cleveland: Time will not permit me to take up the many points brought out in the discussion. I wish to call attention, however, to the fact that neither Dr. Meyer nor Dr. Lewis completed his discussion, because, while in Dr. Meyer's discussion he says in nondebrided cases practically twelve were infected and debrided, 4.2 per cent. were infected; he, however, did say which of the nondebrided cases were cleaned up according to my technic and which were neglected. It is very unfair to put these neglected cases in the nondebrided. I should like to find out the statistics in the sixty-five nondebrided cases which were thoroughly cleaned up. Dr. Lewis speaks of only sixty cases which ranged in severity between limbs ready for amputation and mere punctures. I did not catch what percentage of cases remained clean. In the published paper there will be a few statistics I did not read. In a hospital drawing its clientele from the streets, railways and factories, we have a record of 135 compound fractures of all kinds and with only one or two exceptions treated conservatively as outlined with no limb or life lost from infection. Now, at times we may have to do a partial débridement; that is conservatism. The thing I wish to bring out is that we do not need screws, levers, plates or operative intervention of any kind on the bone, as a part of the immediate treatment. Both Dr. Thomas and one of the other speakers, when they did operate, operated after a lapse of five or six days, after a defensive reaction had been set up. This is in accord with one of the points I tried to bring out, that the immediate treatment in compound fracture should be conservative.

THE FRACTIONATION OF INSULIN PROTEIN BY ELECTRODIALYSIS

PRELIMINARY REPORT *

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Somogyi, Doisy and Shaffer[1] have reported that insulin is a protein-like substance, which may be flocculated from solution in water by an adjustment of acidity to p_H 5, the iso-electric point of insulin protein. Because of this property, it seemed probable that the fractionation of insulin from inactive substances with which it is associated could be accomplished by electrodialysis in an apparatus that has been found effective in a similar problem.[2] Only a few experiments were made, the results of which seem to justify making this preliminary statement.

Twenty-five cubic centimeters of insulin-Lilly containing 40 labeled units per cubic centimeter was diluted to 50 c.c.; 1 c.c. was set aside for a control in the unit determinations, and the remainder was divided into two equal parts. Both were electrodialysed in the apparatus described for the fractionation of the immune pseudoglobulins,[2] and under identical conditions. Part 2, because of being contained in a wider beaker, had only half as much surface exposed to the dialysing membranes as Part 1. Within twenty minutes, electrodialysis at 90 volts against distilled water flocculated practically the entire content of protein and deposited it on the anodic membrane. When electrodialysis was discontinued, this deposit quickly redissolved in the surrounding solution. After two and one-half hours, the deposit no longer redissolved in the supernatant liquid, but settled on the bottom of the beaker in small crystal-like (but not crystalline) clumps. After five hours of electrodialysis of Part 1 and ten hours of Part 2, the liquid was centrifugated from separated solids and again electrodialysed, six hours for Part 1 and twelve hours for Part 2, at which time no further separation was visible. The samples were unavoidably exposed to forty-eight hours of simple dialysis in the course of the experiment. The sediment from Part 2 was dried to constant weight over sulphuric acid; Part 1 was dissolved directly in 12 c.c. of physiologic sodium chlorid solution and 0.2 c.c. of tenth-normal hydrochloric acid. The dried sediment from Part 2 weighed 15.8 mg., and the weight of dried sediment per unit was 0.046 mg.

Results of Electrodialysis

Part	Original Value in Units	Value of Supernatant Liquid After Flocculation	Value of Sediment	Per Cent. Flocculated	Per Cent. Recovered
1	480	30	300	62.5	68.8
2	480	110	340	70.8	93.8

According to the results obtained, from 60 to 70 per cent. of the product containing the active principle can be flocculated from the commercial insulin-Lilly by electrodialysis, and the sediment so obtained may

* From the Pathological Laboratory of St. Luke's Hospital, Chicago.

1. Somogyi, M.; Doisy, E. A., and Shaffer, P. A.: Biol. Chem. 60: 31-58 (May) 1924.

2. Locke, A. P., and Hirsch, E. F.: J. Infect. Dis., to be published.

be dried without loss. The dried sediment is green-black, and on resolution smells strongly of the phenolic preservative in the original insulin-Lilly. The large amount flocculated and remaining in solution in the dialysing apparatus (93.8 per cent. in Part 2) indicates that the permeability of parchment paper to insulin as reported by Shonle and Waldo [3] is comparatively slight. The lower yield (68.8 per cent. in Part 1) in the unit containing the doubly great surface exposed to electrodialysis, however, indicates that the permeability may be considerable, and a four-compartment cell utilizing this permeability will afford a method for flocculating the more permeable portions from the less. Even the comparatively impure material prepared in these preliminary experiments contains 40 per cent. less associated inactive protein per unit than does the original insulin-Lilly.[1] It is further suggested that the method of electrodialysis can economically replace the precipitation methods now in use for the purification of pancreatic extracts.

3. Shonle, H. A., and Waldo, J. H.: J. Biol. Chem. **58**: 731-736 (Jan.) 1924.

INDUCED HYPOGLYCEMIA AS A MEANS OF RESTING AND IMPROVING PANCREATIC FUNCTION

IN PATIENTS WITH DIABETES *

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Rest of the pancreas has often been advocated as a possible method of improving its insular function and thereby raising the carbohydrate tolerance of patients with diabetes. Before the development of insulin therapy, this was attempted with dietary restrictions, but rarely attained in sufficient degree to accomplish the desired result. With insulin, there is no case of diabetes that cannot be rendered urine sugar free and normoglycemic, if diet is sufficiently reduced and insulin given in adequate amounts. This fact has led to the hope that a prolonged period of such intensive treatment may afford rest for a deficient and overworked pancreas and be followed by improved carbohydrate tolerance.

It is constantly being stated and reiterated that insulin is not a cure for diabetes, that it merely supplies something that is lacking in the diabetic patient, and that cessation of insulin treatment leaves the patient in the same condition as he was before. Cases have been reported to prove that carbohydrate tolerance is not raised by insulin therapy.

Other reports, however, tend to show that the hope of more or less prolonged fundamental improvement may, at least partially, be fulfilled; and it is possible that patients who do not show raised carbohydrate tolerance either have not received sufficiently intensive treatment, or are unable, because of old age or some primary pancreatic or constitutional disease, especially arteriosclerosis, to respond. Naturally, one would expect youthful patients to possess greater recuperative powers, and it is these patients, often showing the severest form of the disease, who fortunately seem best suited for this method of treatment.

* From the Evans Memorial of Clinical Research and Preventive Medicine.

Several writers, among them Geyelin, Allen, Wilder and Major, have made statements supporting this expectation. Thus, Allen [1] says: "We are using intensive insulin treatment in some very early cases of juvenile diabetes in the rather feeble hope of enabling these children to outgrow their diabetes." Wilder [2] asserts that "some patients do, indeed, show improvement in tolerance, following a period of insulin treatment"; and Major,[3] reporting the case of a boy with severe diabetes, writes that "during a period of three months his daily dosage of insulin has been reduced from 75 units to 15 units, which we feel is an indication of increased carbohydrate tolerance." Furthermore, Geyelin, Harrop, Murray and Corwin,[4] shortly after the introduction of insulin treatment, reported several cases of juvenile diabetes, some of which, as time went on, seemed to require smaller doses of insulin to utilize a given amount of carbohydrate. This is all the more noteworthy in that the last named authors never totally abolished glycosuria for more than ten days, for fear of insulin reactions.

With frequent blood sugar determinations there need be no anxiety about the occurrence of reactions, and I wish to urge the adoption of blood rather than urine tests as a guide for the treatment of diabetes. The fallacy of using glycosuria as a therapeutic control and as a criterion of carbohydrate tolerance is easily shown by the fact that marked hyperglycemia, 300 mg. and possibly more, may be found in some cases of severe diabetes after the urine has become sugar free. With blood sugar two or three times the normal amount, the Langerhans tissue of the pancreas, whose function it is to maintain glycemia at its normal level, is of necessity still overburdened, even although glycosuria be absent.

It is not surprising, therefore, that treatment guided by urinalyses has effected but little improvement in carbohydrate tolerance. Indeed, it would seem that a carefully controlled prolonged period of induced hypoglycemia is the only really effective method of resting the pancreas and of allowing it to resume some of its normal function, provided its power of recuperation has not been lost.

Unfortunately, young persons with diabetes who, as was previously intimated, should be particularly responsive to this method of treatment, are notoriously unreliable, and it is often difficult to exercise complete control over them because of their lack of cooperation. Furthermore, it is not always feasible to impose prolonged hospitalization, by which alone effective supervision can usually be maintained.

The following is a summary of our first case of diabetes subjected successfully to prolonged hypoglycemia. The results are highly encouraging and warrant the hope that this method of treatment may be equally beneficial to other young diabetic patients.

REPORT OF CASE

R. S., a man, aged 23, weighing 118 pounds (53.5 kg.) was admitted to the hospital, Sept. 15, 1923, apparently in a precomatose state. He felt weak and drowsy, had lost much weight, and had the usual symptoms of thirst and hunger. Urinalysis showed a strong sodium nitroprussid reaction and 120 gm. of sugar in twenty-four hours. The blood sugar (method of Folin and Wu) was 560 mg. in 100 c.c. of blood.

1. Allen, F. M.: The Treatment of Diabetes with Insulin, J. A. M. A. **81**: 1330-1335 (Oct. 20) 1923.
2. Wilder, R. M.: Insulin, M. Clin. N. Am. **7**: 1-12 (July) 1923.
3. Major, R. H.: The Treatment of Diabetes Mellitus with Insulin, J. A. M. A. **80**: 1597-1600 (June 2) 1923.
4. Geyelin, H. R.; Harrop, G.; Murray, M. F., and Corwin, E.: The Use of Insulin in Juvenile Diabetes, J. Metabol. Res. **2**: 767-791, 1922.

A diet containing approximately 90 gm. of protein, 130 gm. of fat and 40 gm. of carbohydrate, equivalent to about 1,700 calories, was prescribed, and the patient was given 10 units of insulin before each meal. Six days later, the urine sugar was 84 gm. in twenty-four hours, and the blood sugar, 308 mg. Insulin was then increased to 15 units three times a day. The urine became sugar free five days later, while the blood sugar dropped to 143 mg., and the sodium nitroprussid reaction became very faint. The patient was discharged from the hospital, September 29, with instructions to continue insulin and to report at frequent intervals for blood sugar determinations.

He came, October 17, about three weeks after discharge, during which time he had adhered to a diet similar to that received at the hospital, and had taken 15 units of insulin three times daily. He reported that he had experienced several mild insulin reactions. The blood sugar at this time was 70 mg., which is definitely hypoglycemic. The insulin dose was reduced to 10 units three times a day. He intended to go back to his work at this time, and his diet was therefore increased to about 100 gm. of protein, 150 gm. of fat and 50 gm. of carbohydrate.

November 11, about four weeks later, he reported that he still had an occasional reaction, very mild in type and consisting chiefly of a chilly feeling and slight headache. The blood sugar was 74 mg., practically the same as at the previous visit. The insulin was then reduced to 5 units three times a day. December 20, the blood sugar was still below normal, 80 mg. in 100 c.c., so that insulin was omitted entirely. This was about three months after his discharge from the hospital, during nearly all of which time he probably had been definitely hypoglycemic.

Aside from the mild insulin reactions, he had felt well during this time and had gained in weight from 118 pounds (53.5 kg.) at the time of hospital entrance to 135 pounds (61 kg.) in December. He had resumed his usual employment, which was fairly strenuous and consisted of testing safety valves on locomotives.

He reported again in early February, when the blood sugar was 90 mg. At this time he was allowed a slice of bread at each meal and some 10 per cent. fruit, raising his daily carbohydrate allowance approximately to 120 gm. March 5, 1924, the blood sugar had risen to 125 mg., but the urine remained sugar free. The patient had apparently reached the limit of his tolerance, and his diet was therefore not increased at this time.

SUMMARY

A young man with diabetes mellitus was subjected to a prolonged period of hypoglycemia, for the purpose of determining the effect of this method of treatment on carbohydrate tolerance. It seemed reasonable to expect a certain amount of recuperation of the limited, and therefore overburdened, pancreatic function as a result of such a period of rest induced by exogenous insulin administration. Young subjects with strong recuperative powers should prove particularly responsive to this form of treatment.

The case reported here tends to strengthen this belief because of the following facts: On a diet containing but 40 gm. of carbohydrate, the use of 30 units of insulin a day was insufficient to render the patient urine sugar free in six days, merely bringing about a reduction of urine sugar from 120 to 84 gm. in twenty-four hours, and of blood sugar from 560 to 308 mg. It was only after insulin had been increased to 45 units that glycosuria disappeared and the blood sugar was markedly reduced. After a period of probably constant hypoglycemia, lasting about four months, on the contrary, insulin was no longer required, even with a diet containing 120 gm. of carbohydrate, or about three times the initial amount, to hold glycemia at or near the normal level.

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CONJUNCTIVITIS INFECTIOSA NECROTICANS (PASCHEFF)

REPORT OF FOUR CASES CORRESPONDING CLINICALLY TO THIS CONDITION *

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Since the orginal report of Parinaud, thirty years ago, on the type of conjunctivitis that has since borne his name, many cases have been recorded in the literature with this diagnosis. Some of them were of the same character as those reported in the original article, while others bore no clinical resemblance to this disease. Subsequent investigation has developed the fact that monocular infections of the conjunctiva, with glandular involvement, may be due to more than one cause.

Verhoeff,[1] both in his early and in his late reports, is convinced that the type more nearly representing the original Parinaud type is due to leptothrix. Other writers have found the human, bovine and pseudotubercle bacilli.

Vail[2] reported what is believed to be the first case of ocular infection with squirrel plague, or with *Bacterium tularense*.

Recently, Patton and Gifford[3] reported a type of monocular disease that they called "agricultural conjunctivitis."

Another type that possibly may have escaped notice was reported by Pascheff[4] in 1916-1917, which he called "conjunctivitis infectiosa necroticans." It is this type of cases that have come under my observation with which we are concerned here.

These cases consist of induration and swelling of the preauricular, parotid and submaxillary glands, which have been followed by suppuration in three of the four cases. There was a rise of temperature, the eyelids were red and swollen, and on the tarsal and retrotarsal fold of the conjunctiva there were white spots the size of a millet seed, some elevated, others as excavated ulcers. Some of these spots would cicatrize while others would appear. There were no vegetations, follicles, or trachoma granules. The process in the conjunctiva usually lasted about two or three weeks, while the glandular affection may last from two to three months. Pathologically, Pascheff found polymorphonuclear leukocytes, tissue cells in active proliferation, and a peripheral zone of lymphocytes. Experimental inoculation of guinea-pigs with excised portions of the affected conjunctiva produced death in from seven to eight days. The inoculated animal showed in the spleen numerous white necrotic spots, which, by inoculation of the guinea-pig, produced the same conjunctival condition as found in the clinical cases.

He isolated in all his cases an organism which he called *Micrococcobacillus polymorphus-necroticans*, in size from 0.25 micron to 2 microns, with the shape usually of that of a small coccus, but sometimes that of a bacillus. In discussing these cases, he says that he

* Read before the Section on Ophthalmology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Verhoeff, F. H.: Perinaud Conjunctivitis, a Microbic Disease Due to a Hitherto Undescribed Filamentous Organism, Arch. Ophth. **43**: 345, 1913; Observations on Perinaud Conjunctivitis, Am. J. Ophth. **1**: 705 (Oct.) 1918.

2. Vail: Squirrel Plague Conjunctivitis in Man, Ophth. Rec. **23**: 487, 1914.

3. Patton, J. M., and Gifford, S. R.: Agricultural Conjunctivitis, Tr. Sect. Ophth. A. M. A., 1921, p. 226; Am. Ophth. **5**: 623, 1922.

4. Pascheff: Klin. Monatsbl. f. Augenh., 1916-1917; abstr., Arch. Ophth. **47**:93; Arch. d. ophth., 1921; Brit. J. Ophth., **8**: 25, 1924.

considered experimental and histologic evidence to be of much more value than any clinical appearance, and that, to form the diagnosis, it is not sufficient to observe the white spots, but to produce the disease by animal experiments. However, he states that he has found the white spots present in cases which gave no result from guinea-pig inoculation.

Four cases, answering exactly the clinical description given by Pascheff, have come to my attention in the last seven years, one in consultation, and three in practice.

REPORT OF CASES

CASE 1.—A man, aged 50, seen in 1917, had slightly swollen lids, numerous small scattered ulcers over the tarsal conjunctiva, enlargement of the preauricular and submaxillary glands, irregular temperature, and mucous secretion. Later in the disease, there developed a small ulcer of the cornea, which resulted in perforation. Smears and cultures of the secretions from the conjunctiva proved negative. There was no history of animal infection. From clinical appearance the case was thought to be one of squirrel plague infection, but laboratory investigations apparently disproved this theory. The patient was under observation for about three weeks, and made a full recovery.

CASE 2.—A man, aged 30, from the same locality as Patient 1, had the same widely scattered conjunctival ulcers, slight mucous secretion, and enlargement of the preauricular and submaxillary glands. There was no history of animal infection. He was in the office only once, not reporting again. Smears and culture from the conjunctiva were negative.

CASE 3.—A woman, aged 25, Mexican, from a rural community, seen in 1919, had conjunctival involvement and secretion similar to the other two cases, but, in addition to the enlargement of the preauricular and submaxillary glands, there was extensive involvement of the axillary glands. There was no history of animal infection. Smears and culture from the conjunctiva were negative. She was seen three times in the office during the course of a week, and did not return.

CASE 4.—G. C., a farmer lad, aged 14, seen in August, 1921, had never had any trouble with his eyes up to fourteen days before I saw him, but on that date he felt something in his left eye. His mother removed what proved to be a small black object, the nature of which could not be determined. He had no further trouble for a week, when he developed pain and redness in the left eye, with swelling on the left side of the face and neck, with the feeling that he had fever. There was no history of animal infection other than that of the foreign body.

The lids of the left eye were slightly swollen, but not sufficiently to interfere with their movement. There was a small amount of mucous secretion along the edge. Both upper and lower tarsal conjunctivae had eight or ten widely scattered, superficial ulcers from 2 to 4 mm. in size. The conjunctiva between the ulcers was somewhat red and fluffy (but not markedly thickened; there was no granulation or vegetation. The preauricular, parotid and submaxillary glands were enlarged and sensitive; the temperature was 101.8 F. The right eye was normal. As I had failed to find the microorganism in the other cases, the eye was cocainized and one of the ulcers was deeply curetted and a smear and culture made. The smear was negative, and subsequent reports showed that there was no growth on the culture mediums. An application of 2 per cent. silver nitrate solution was made on the conjunctiva, and 1 per cent. mercurochrome-220 soluble was prescribed. The patient went home and reported again two days later with no change in his condition.

He was sent to the hospital for treatment and investigation, his temperature on entrance being 101. On the fourth day, one of the large ulcers was dissected out and fixed in Zenker's solution. A blood count showed 15,000 white cells, 83 per cent. polymorphonuclears, 8 per cent. small and 1 per cent. large lymphocytes. He remained in the hospital for a week, with an irregular temperature, going as high as 101.8. Treatment with ordinary remedies, such as organic silver salts, seemed to have no effect on the disease.

At the end of the week, which was the seventeenth day after the onset of the disease, the eye began to clear, the glands became less painful and swollen, with no signs of breaking down, the fever subsided, and the patient was allowed to return home. Many of the spots in the conjunctiva had disappeared. He reported to me eight days later, at which time two small necrotic spots remained. The others had disappeared, leaving no mark in the conjunctiva. The temperature was normal. The glands were still palpable, but smaller, less sensitive and with no sign of suppuration. In hope of securing material for further investigation, I gave the patient positive instructions to report again if there developed suppuration in the glands. He was not seen again for over a month, when he was met on the street, at which time he stated that the preauricular gland had opened spontaneously and discharged for a few days, but that since then he had had no further trouble of any kind. Section of the dissected ulcer revealed necrotic tissue.

COMMENT

The first case was thought to be squirrel plague infection, even though no history of animal inoculation could be obtained and notwithstanding the negative laboratory reports. The second and third cases, however, brought some doubt to my mind. The fourth case gave opportunity for further study; and, as laboratory investigations were negative, there occurred to my mind the possibility of the condition being due to larvae of some character; therefore, one of the ulcers was dissected for sectioning, but nothing was found to confirm my suspicions.

Pascheff's article did not come to my attention until after the fourth case was treated, and therefore his line of investigation was not carried out. Since that time no other cases have occurred either in my practice or in the practice of other oculists in this community.

All of these cases were of the same clinical character and, I believe, due to the same cause. They correspond in appearance and course to those reported by Pascheff, and it is hoped that sometime in the future another may present itself, when his investigations will be carried out.

ABSTRACT OF DISCUSSION

DR. D. T. VAIL, Cincinnati: In The *Ophthalmic Record*, Chicago, October, 1914, I reported a case of monocular infection which Professor Pascheff's and also Dr. Stark's cases very closely simulate. During the active stage of my case, I summoned the aid of Dr. Williams B. Wherry, professor of bacteriology of the University of Cincinnati College of Medicine. Dr. Wherry identified *Bacterium tularense*, which was first discovered by McCoy and Chapin as being the active agent in the production of squirrel plague. I therefore reported my case as being "squirrel plague conjunctivitis," or *B. tularense* infection of the eye, the first on record, and Dr. Wherry published a full account of his experiments, with colored illustrations, in the *Journal of Infectious Diseases*, Sept. 2, 1914. Our reports were published in 1914, Professor Pascheff's in 1916-1917. In comparing the data and illustrations published by Professor Pascheff with those of Dr. Wherry, I was struck with the marked similarity between them. I referred the matter to Dr. Wherry and requested an opinion. Dr. Wherry replied that he was interested in Professor Pascheff's paper and that there was no doubt in his mind that the disease which Pascheff described in 1916 as conjunctivitis necroticans infectiosa was the same disease he and I described in 1914. The formation of multiple whitish or yellowish foci of necrosis in the palpebral conjunctivae, accompanied by fever and involvement of the preauricular, parotid and submaxillary glands, which usually suppurate, as described by Pascheff, is an accurate description of our own cases. According to Pascheff, when guinea-pigs are inoculated, they die in seven or eight days, rabbits a little later. This corresponds with our own findings; namely, that when the virus is inoculated from man

to susceptible rodents it takes about a week to produce death. However, if the virus is passed from rodent to rodent, the time of killing is shortened to four days. Pascheff apparently did not perform such animal passages. Pascheff was able to produce the "small necrotic points" in the conjunctivae of guinea-pigs with infective material from a case in man, and we likewise described the same findings.

DR. GEORGE F. KEIPER, Lafayette, Ind.: At the Cincinnati meeting of the American Academy of Ophthalmology and Otolaryngology I reported a case of Parinaud's conjunctivitis, and in the bibliography included about fifty up-to-date references. Tuberculosis was supposed to be a causative factor. I could find no evidence of tuberculosis in this case. I took with me to inspect the premises of this patient the head of the department of veterinary science at Purdue University, Dr. R. A. Craig. We could find nothing in the way of animal conjunctivitis. Since that time, I have published reports of two other cases. We should give great credit to Dr. Verhoeff for running to its lair the rarely causative factor in this condition; it is a diagnostic point by which we are able to differentiate Parinaud's conjunctivitis from the condition Pascheff mentioned in 1916 or 1917, from the agricultural conjunctivitis of Gifford and the squirrel plague bacillus of Vail. No examination of these cases can be complete without attempting to find *Leptothrix*. If this is found, it is a case of Parinaud's conjunctivitis, and if it is not found, it must be something else. One of the marked characteristics of these cases of Parinaud's conjunctivitis is the immense granulations found on the palpebral conjuntiva. These should be excised, for the benefit of the patient and also that we may have microscopic examination made. The swelling of the preauricular glands is sometimes great, and there is an anatomic point here as to what the preauricular gland drains. In furunculosis of the ear there is a swelling of the gland; also in Parinaud's conjunctivitis. In other words, the gland apparently drains both ways. In the necroticans area, we sometimes have immense swelling of the preauricular gland, and with so much pus that it must be evacuated. But the point I wish to emphasize is that no diagnosis can be made of this condition unless a microscopic examination is made to differentiate the condition that Dr. Vail has called to our attention from apparently like conditions.

DR. CHARLES A. BAHN, New Orleans: Several days after reading Dr. Stark's article in the presessional volume, I had the pleasure of seeing a case that clinically is identical with those he mentioned, that of a young man, in this country several months, who had been exposed to animal infection. This patient had a marked inflammatory lid reaction, with ulcers on the conjunctiva, eyeball and eyelid, and marked preauricular enlargement and tenderness. His temperature was about 100 F. for a week, when it gradually subsided. These symptoms, lasted three or four weeks. Bacterial examination showed only staphylococcus, no *Leptothrix*. The interesting point was that, during the three weeks, the patient developed a focal eruption on the cheek that was pronounced by a very competent dermatologist to be herpes. I have wondered whether or not there is any association in the chemical reaction of these comparatively similar conditions, which apparently come from undetermined, ectogenous causes.

DR. JAMES M. PATTON, Omaha: In 1921, Dr. S. R. Gifford and I reported six cases of a peculiar monocular condition which, owing to its limitation to individuals engaged in rural occupations, we named "agricultural conjunctivitis." As Dr. Stark has mentioned these in connection with his cases, it seems worth while pointing out the features of similarity and also those of difference between his cases and ours. The affection of one eye, the swelling of the lids, and of the preauricular glands are the principal features in common. Our cases, on the other hand, instead of the discreet ulcerations of the conjunctiva seen in the case of Dr. Stark and other cases of Parinaud's syndrome, showed a diffuse membranous formation on the conjunctiva, patches of superficial necrosis of the skin of the lids, and, in three cases, involvement of the cornea, apparently by necrosis of the epithelium. This last point is not mentioned as a characteristic feature of the disease, as it was not always present. It is mentioned, however, to show the severity of the condition, as two eyes were practically lost by it. One of these is a recent case seen since our report appeared. In our first report, mention was made of a large gram-positive anaerobic bacillus which was found in four, and probably five, out of our six cases, along with other organisms, more usually found in the conjunctival sac, which were considered secondary invaders. In the two cases seen since (one that was reported in 1923), this organism has also been found in large enough numbers to warrant the belief that it is the etiologic factor in the disease. In one of these cases, it was isolated in pure culture, but, so far, animal inoculations with it have been negative. Thus, our cases, while not belonging distinctly in the class of Parinaud's syndrome, represent an allied condition that might be confused with it clinically, and a distinct clinical entity, for which we believe the large gram-positive bacillus isolated by us is responsible.

DR. CLARK W. HAWLEY, Chicago: I had a case about a year ago in which all the lid and general symptoms as described by Dr. Stark were present. The unusual circumstance secondary to the lid trouble was an abscess of the parotid gland on the same side. Unfortunately, it was not possible to make bacterial and other examinations, as should have been done. The local treatment to the lid may be of interest, as it seemed to be quite effective. I covered a toothpick with a small amount of cotton, and painted the lid twice a day or oftener, if possible, with 1: 500 mercuric chlorid solution. Whether that treatment would be as efficacious in other cases I do not know.

DR. H. H. STARK, El Paso, Texas: All these patients lived in a rural community, but no history of animal infection through rabbits or squirrels could be elicited. However, in all such communities, there is always a possibility of contact with cats and dogs. There is a decided clinical resemblance between the Pascheff cases and squirrel plague infection, but they do not resemble Dr. Patton's cases; neither do they resemble Parinaud's infection, or any other type of conjunctivitis that I have seen. The treatment suggested by Dr. Hawley is interesting; however, all my cases were self-limited, and it is doubtful whether they required much treatment.

A METHOD OF DEMONSTRATING TUBERCLE BACILLI IN THE URINE*

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BOSTON

In establishing a diagnosis of renal tuberculosis, certain points of information are essential. Among these is the finding of tubercle bacilli in the urine of the patient suspected of having tuberculosis—in a catheter specimen from the bladder; or, better yet, from the urine obtained by means of a ureteral catheter from the renal pelvis itself.

At best, in certain cases, especially in those early cases in which a diagnosis is most desired, a satisfactory result is often difficult. In view of this fact, believing that positive smears should be obtained in a greater number of instances, Dr. E. G. Crabtree,[1] of the genito-urinary service of the Massachusetts General Hospital, in 1914 employed the so-called dilution method for finding the tubercle bacilli. A modification of this method is now presented with the hope and belief that thereby the results may be further improved.

Before the advent of the dilution method, the procedure for finding tubercle bacilli in the urine was somewhat as follows: Specimens were centrifugated at varying speeds and lengths of time, smears being made directly from the sediments thus obtained. Results were not satisfactory; that they might be improved seemed probable from a consideration of the known facts concerning tuberculous urines.

* From the Genito-Urinary Department, Massachusetts General Hospital.

1. Crabtree, E. G.: Surg., Gynec. & Obst. **23**: 221 (Feb.) 1916.

In the face of repeated negative smears, guinea-pigs inoculated with small portions of the identical urines were shown to develop clinical and pathologic tuberculosis. Obviously, in the urine of a patient having renal tuberculosis the bacilli must in a majority of cases be present in goodly numbers and evenly distributed. Therefore, it seemed that their demonstration should be more often possible, were a proper method employed.

The chief obstacles to the demonstration of tubercle bacilli in the urine are the presence of pus and detritus, and the specific gravity of the organism. It happens that the tubercle bacilli are of practically the same specific gravity as the tuberculous urine, whereas that of detritus is greater. Therefore, by the ordinary methods of centrifugalization, only those bacilli can be obtained from the sediment which happen to be drawn down along with the pus and detritus, the majority remaining in the urine above. On these basic facts, the dilution method was evolved.

The first step toward the dilution method was an attempt to concentrate the sediment from several tubes of tuberculous urine. A tube of urine obtained by catheter from the bladder or the kidney was centrifugated until a sediment was obtained, the supernatant fluid discarded, the same tube refilled with urine and the process repeated, the final sediment being that from several tubes.

By diluting the urine one half with sterile water, the specific gravity of the solution becomes less than that of the bacilli, so that whereas previously the organisms were only with difficulty or not at all driven down by centrifugalization, by this procedure they are readily obtained in the sediment. Removal of pus and detritus further aids. This may be accomplished as follows: A tube of urine is centrifugated at low speed for two or three minutes, thereby removing the bulk of the pus and detritus. One half of the supernatant cloudy fluid containing a few pus cells and the bacilli is poured off into another tube and an equal amount of sterile water added. This second tube is centrifugated at highest speed for from fifteen to thirty minutes. The contents of several tubes may be concentrated, if desired, the smear being made from the sediment obtained.

With the innovation of the dilution method, the results improved. Formerly demonstration of tubercle bacilli was the exception. Following its advent of 100 consecutive cases recorded as renal tuberculosis in the genito-urinary service at the Massachusetts General Hospital, a search was performed in eighty-four. Organisms were demonstrated in fifty cases, or 60 per cent. They were not found in 40 per cent. Three of the latter subsequently proved to be nontuberculous. In one case the bacilli were reported as present when tuberculosis was not found later at operation.

When the ever changing personnel of the house officers who usually perform the urine examinations is taken into consideration; when it is remembered that the series covers the period of the war, during which distractions were many, the results are not discouraging. However, it was felt that there was room for improvement.

In 1921, Dr. S. T. Woo, a house officer in one of the medical services, noticed that the demonstration of tubercle bacilli in spinal fluid was greatly facilitated by the addition of alcohol. Presumably a protein precipitate is thrown down, which carries some of the bacilli with it. Empirically, the alcohol technic was employed with the dilution method on tuberculous urines with gratifying results.

The technic is as follows: The urine is obtained by catheter from the bladder or kidney. A tube of urine is centrifugated at lowest speed for two or three minutes, thereby removing the bulk of the pus and detritus. The supernatant cloudy fluid, containing a few pus cells and the bacilli, is poured off, one half is discarded and the remaining half is poured into a second centrifuge tube. To this half filled tube, one quarter volume of 95 per cent. alcohol is added, the remaining quarter being distilled water. This mixture is centrifugated at highest speed for forty-five minutes until clear, the supernatant fluid discarded, and a smear made from the sediment obtained with a flamed wire loop. The smear is allowed to dry and is then fixed by being passed rapidly two or three times through a Bunsen flame.

The centrifuge must be an electrically driven high speed machine. When carrying a load of four tubes, it should make from 2,000 to 2,100 revolutions per minute, which produces a force 1,077 times that of gravity.

The Ziehl-Neelson stain is employed. A more delicate stain is obtained if a steam bath is used rather than heating the smear with the direct flame. This is easily accomplished by placing the glass slide over the open top of a can containing steaming water. In this way the stain is heated sufficiently without danger of precipitating the dye. Twenty minutes suffices. The preparation is decolorized by exposure to 30 per cent. nitric acid, followed by alcohol (Czaplewski's solution) or to 20 per cent sulphuric acid. The pitfalls are that occasionally nitric acid and alcohol may not decolorize all acid-fast bacilli other than tubercle bacilli. Twenty per cent. sulphuric acid will decolorize all other acid-fast bacilli, but may also decolorize tubercle bacilli. The decolorized smear is washed with water, and counterstained with methylene blue.

The dangers of error in diagnosis are the same as with other methods of staining tubercle bacilli in the urine. The smegma bacillus is the chief offender of the acid-fast group of organisms. It inhabits the deep urethra in the male, and the anterior portion of the urethra in the female, but is rarely, if ever, present in bladder urine, except as an occasional contamination. It does not invade the renal pelvis.

Centrifuge tubes may be cleaned by any method that will insure against the presence of acid-fast organisms. Treatment with acid, distilled water and alcohol, and drying with ether, may be employed.

Although insufficient time has elapsed since the alcohol method came into vogue in the genito-urinary service at the Massachusetts General Hospital to collect a series of value for comparison with previous figures, it can be said with safety that results have been better. On several occasions, tubercle bacilli have been readily demonstrated by the alcohol method in urines when other methods performed simultaneously have failed, and this occurs in those borderline cases in which the bacilli are few, often in those cases in which a definite diagnosis is most desired.

This method will probably not prove in the future a panacea for all the failures of the past. It is not offered as such. Several hours' search will often disclose the solitary group of bacilli which otherwise will be missed. Whatever the method employed, its value will continue to depend in great part on the proficiency and diligence of the person conducting the search.

227 Beacon Street.

Clinical Notes, Suggestions, and New Instruments

AN INSTRUMENT TO FACILITATE THE OPERATION FOR BUNIONS

C. F. EIKENBARY, M.D., SPOKANE, WASH.

For some years it has been my custom to do the so-called Mayo operation for bunions, and I have yet to see any bad results from the removal of the head of the bone. It was formerly my custom to cut off the head of the bone by means of bone forceps; but, during this procedure, it frequently happened that the cut end of the metatarsal was somewhat splintered, which occasionally resulted in a slight amount of new bone formation. Also, I found that it required considerable time to trim the bone into exactly the proper shape. For several years I have removed the head of the bone by means of the Gigli saw. This has been found entirely satisfactory. It leaves a smooth surface, very little reshaping of the end of the bone is necessary, and it saves a great deal of time in the operation.

To facilitate the passing of the Gigli saw around the metatarsal bone, I have made use of a slightly modified Doyen's rib raspatory. The modification merely consists in changing the oblong portion to a circle. A slot is cut in the end of the instrument. With the instrument in the shape of

Modification of Doyen's rib raspatory, showing hook for attachment of Gigli saw, and nearly circular shape to admit of easily passing the instrument around the head of the metatarsal.

a circle, or rather a partial circle, it is very easy to encircle the head of the bone, after which the Gigli saw is hooked into the notch and dragged back around the bone. The removal of the head of the bone then becomes a very simple procedure.

Paulsen Building.

EPINEPHRIN IN THE TREATMENT OF THE PAIN OF HERPES ZOSTER

W. W. DUKE, M.D., KANSAS CITY, MO.

Herpes zoster belongs in the category of diseases that cause severe pain, especially when it occurs in individuals of mature or advanced age. The pain may start before, during or after the appearance of the vesicles, and may persist almost without remission for weeks or months. Pain of this type is difficult to alleviate with anything milder than morphin. For this reason, any remedy that offers relief in a fair number of cases should be gratefully accepted by the patient. In epinephrin we have a remedy that will temporarily relieve the pain in a majority of cases. My use of epinephrin in the treatment of herpes zoster was based on an observation of a case of hives and angioneurotic edema in a patient who had recently weaned a baby. About one hour before I saw her, there had appeared about fifteen or twenty vesicles on the lower lip, associated with marked swelling of the lip. On administration of epinephrin, the swelling of the lip subsided rapidly, and, strange to say, within a period of less than two hours the vesicles completely disappeared, leaving the skin in normal condition. During a period of four years since that time, I have used epinephrin in the treatment of herpes zoster. I have been disappointed in its effect on the vesicular lesions, but have been surprised to find that in more than half the cases it relieved the pain almost immediately, if given in adequate dosage. Its failure to relieve the eruption may have been due to the fact that I have not used it in any cases in its earliest stage.

In using epinephrin in this condition, it is necessary to adjust the dose to suit the individual case. The dose should be pushed until the patient experiences relief or an epinephrin tremor. The amount necessary to give relief or tremor varies in different individuals from 1 minim up to several cubic centimeters—in fact, it varies in the same individual at different times almost to this extent. As a general rule, it should be given subcutaneously in doses of about 0.5 c.c. at five minute intervals, until the patient is either relieved or shows a distinct tremor. When the tremor appears, the pain in the majority of cases disappears. It usually returns in from two to twenty-four hours. The dose of epinephrin can then be repeated and continued indefinitely without injury to the patient. As a rule, it makes the use of morphin unnecessary, or at least reduces its necessity to an occasional dose.

Federal Reserve Bank Building.

VINCENT'S ANGINA OCCURRING IN A PATIENT UNDER TREATMENT FOR SYPHILIS

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Despite the fact that Vincent's angina is a local disease, in the sense that there is no spirochetemia, there are many clinicians who supplement the topical treatment with intravenous injections of the arsphenamins.

The case here reported is of interest, occurring, as it did, in a patient who was receiving an intramuscular injection of 0.4 gm. of sulpharsphenamin at short intervals, and no mercury. If the arsphenamins are of value when exhibited in any manner except locally, should not the comparatively high body saturation reached after the third injection protect the individual against Vincent's disease? I have seen a similar instance once, but there the diagnosis was less clean cut, because of the possibility of a bismuth stomatitis.

REPORT OF CASE

History.—A single woman, aged 31, seen through the courtesy of Drs. Frank Chandler and Fred Bricker, admitted numerous exposures and the development of a primary lesion two months previously. When first seen, she had a well defined maculopapular eruption, a general glandular enlargement, and the remains of an involuting chancre. The blood Wassermann test was strongly positive by the Kolmer technic. She was given comparatively large doses of sulpharspenamin deep in the buttocks every other day for three injections, and put on mercurial inunctions after the third injection. Through some misunderstanding, however, she did not take the unguent as ordered, and five days after her last injection of sulpharsphenamin, when she appeared for her fourth treatment, she complained of feeling ill and of a severe sore throat.

Physical Examination.—The patient was short, slender and markedly underweight. The temperature was 102.3 F. The pharyngeal mucosa was fiery red, and there were a few scattered, discrete vesicles. The gums were only slightly involved, but there were many carious teeth. There were no syphilitic erosions, and the vocal cords were intact. The submaxillary lymph glands were enlarged and rather tender. There was a fading rash over the body with some fine scaling, and the initial lesion was entirely healed. The neurologic examination was entirely negative.

Treatment and Subsequent Course.—The patient was given a mild gargle and a purgative, and when seen, twenty-four hours later, superficial ulcers had appeared in the pharynx and were extending over the tonsils. A dark field examination revealed many large spirochetes with shallow, irregular undulations, easily distinguished from *Spirochaeta pallida*. A smear stained with carbolfuchsin was then found to contain many spirochetes and fusiform bacilli, besides cocci and débris.

The mouth was cleansed with hydrogen peroxid, the lesions were dried, and a stabilized arsphenamin (base) glucose solution was applied twice daily. Because of the rise in temperature, sulpharsphenamin was not given. At the end of six days, the throat lesions were practically healed, the fever had subsided, and the treatment for syphilis was continued.

916 Taft Building.

Special Article

GLANDULAR THERAPY

PHYSIOLOGY OF THE MAMMALIAN OVARIES *

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Because of the limited space for this review, I am excluding consideration of ovarian physiology below mammals. In the mammalian group there is a fair degree of uniformity in female sex life, the outstanding variations being the absence of the phenomena of menstruation in mammals below the primates, the varying frequency of estrus, and such anatomic characters as horns being sex distinctive in some species and not in others.

THE FEMALE SEX LIFE OF MAMMALS

The complexity of the physiologic processes in the mammalian female that depend, directly or indirectly, on ovarian functions is indicated by the following outline:

I. *Preadolescent Period.*
   1. Fetal sex differentiation. There is now considerable evidence that in the mammals such differentiation of sex characters as takes place in the female fetus during intra-uterine life depends on hormones from the anlage of the future ovaries.
   2. Preadolescent nutrition of uterus and mammary glands and such differentiation of the female pelvis as occurs during childhood. It is true that the uterus grows very slowly before puberty, but the infantile uterus differs from the atrophic uterus of the spayed female. We must conclude that the continued growth and nutrition of the uterus during the prepuberty years depends in some way on the ovaries.
   3. Growth. There is some evidence that even during the prepuberty age the growth, particularly of the long bones of the body, is in part controlled or rather inhibited by the ovaries.

II. *Normal Adult Sex Life from Puberty to Menopause.*
   A. Continuous function.
      1. Nutrition of mammary glands, uterus and genital tract.
      2. Development of the female pelvis.
      3. Basal metabolic rate. Not only is the basal metabolism slightly increased during the period of adolescence, but the effect of spaying seems to show that the basal metabolism is maintained at a slightly higher level by some ovarian influence during the entire active sex life.
      4. Sex behavior.
      5. Growth control. Apart from the positive factors of growth in the development of the pelvis, mammary glands, and deposition of subcutaneous fat, the normal ovaries seem to repress some other growth potentials of the body. I refer particularly to the repression of the thymus and of some anatomic characters of the male, characters that may develop parallel with atrophy of the ovaries (virilism, hypertrichosis, pseudohermaphrodism).
   B. Periodic function.
      1. The estrus cycle. This includes the uterine mucosa changes, menstruation and sex urge.
      2. Pseudopregnancy. Uterine mucosa growth and mammary hyperplasia.
      3. Pregnancy. Growth and sensitization of the uterine mucosa, initial interaction of fertilized ovum and uterine mucosa; mammary hyperplasia; suppression of ovulation.

III. *Menopause Phenomena.*—These are principally depression of metabolism, tendency to obesity, cardiovascular instability, and nervous instability.

IV. *Pathologic Deviations.*
   A. Sterility, amenorrhea, dysmenorrhea, sex hypoplasia.
   B. Pubertas praecox; menorrhagia; nymphomania; osteomalacia (?).

Parallel with these varying physiologic processes initiated and maintained by the ovaries, we find the following anatomic elements in the ovaries that may, by hormone production, be the controlling factors in the processes themselves:

I. *Anatomic Elements in the Preadolescent Ovaries.*
   1. Connective tissue cells.
   2. Ovogonia.
   3. Follicular epithelium and atresic follicles.
   4. Theca interna or interstitial cells (?).

II. *Anatomic Elements in the Ovaries from Puberty to Menopause.*
   1. Connective tissue cells.
   2. Ovogonia.
   3. Ova in various stages of development and atrophy.
   4. Follicular epithelium in varying stages of development and atrophy.
   5. Corpora lutea of ovulation and of pregnancy.
   6. Theca interna or interstitial cells (?).

III. *Pathologic Deviations.*—These may be grouped under the following heads:
   1. Abnormally early maturation.
   2. Tumors, including parthenogenetically developing embryos, in the ovaries.
   3. Cystic follicles, associated with nymphomania.
   4. Persistent corpora lutea, associated with suppression of estrus.
   5. Atrophies other than those of the normal menopause.

The new ovarian elements appearing at puberty are the ripe follicles and ova and the corpora lutea. Only the latter are, strictly speaking, new organs, since follicles and ova develop and atrophy throughout child life. The anatomic difference in the follicles is one of degree, but this difference in degree appears to be associated with a new function or hormone, initiating the estrus cycle.

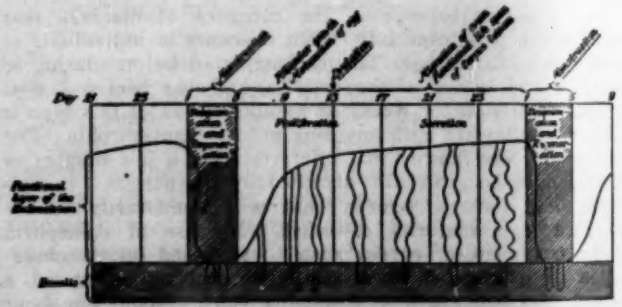

Fig. 1.—Scheme of the menstrual cycle (slightly modified from Schroeder).

Hormone Mechanisms.—The evidence that this complex series of physiologic processes is controlled by the ovaries through hormones is now quite strong, although

* This is the twelfth of a series of articles prepared under the auspices of the Council on Pharmacy and Chemistry. When completed, the series will be published in pamphlet form.

incomplete. The evidence for exclusive hormone mechanisms is derived from the effects of spaying and the effects of grafting of the ovaries. The alternative to hormone function is reflex influence from the sensory or afferent nerves of the ovaries. Denervation of the ovaries does not alter the physiologic processes depending on the ovaries. All these processes stop or are profoundly modified by the removal or atrophy of the ovaries. On the other hand, grafting a piece of the

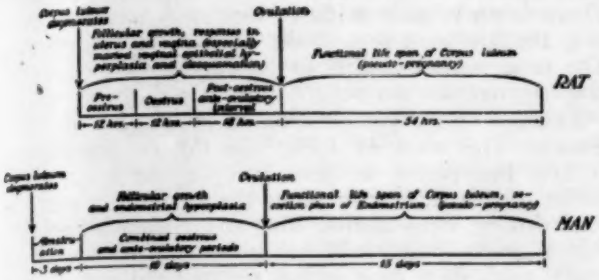

Fig. 2.—Comparison of cyclic estrual cycle of some mammalia and the human estrual cycle (after Evans).

ovary into another region of the body suffices to maintain sex life as long as the graft remains functional. Of course, such graft cannot maintain fertility. Even when ova from such grafts are discharged from ripe follicles, these ova cannot reach the genital tract. Ovarian grafts may be implanted into males; and, if the males were previously castrated, such grafts produce some anatomic and behavior changes in the male in the direction of the characteristic anatomic characters and sex behavior of the female. Another evidence for hormone mechanism is the fact that the corpus luteum of pregnancy on one ovary controls the maturation of follicles in both ovaries. We must therefore conclude that the hormone mechanism of ovarian function is today more than a working hypothesis, even though the hormones themselves have so far eluded isolation and purification and despite the lack of direct evidence from experimental organotherapy. While the action of some of the ovarian hormones appears to be exclusively on the organs of the genital tract or on the ovary itself, other hormones appear to have, perhaps indirectly, a more general influence (basal metabolism, bone growth, nervous system).

The Estrus Cycle.—The chronologic order and interdependence of the several ovarian and uterine processes that make up the estrus cycle have been actively studied by able workers, but some of the points are still not definitely settled, notably the relation of ovulation and the corpus luteum to menstruation in the primates. The best supported views developed by competent investigators in the field are given by the accompanying diagrams. According to these views, menstruation sets in as the corpus luteum spurium atrophies; hence, estruation and ovulation in women precede menstruation by from twelve to fifteen days. Menstruation is the end of the cycle and signifies its biologic failure—absence of fertilization and pregnancy. Lactating women may become pregnant without a menstrual period between labor and conception, showing that ovulation precedes menstruation; and, when the ovum is fertilized and implanted, the degeneration of uterine mucosa and the parallel menstruation do not follow. The sequence of the various events, including the period of heat, or when the female is receptive to the male, have been made out with greater precision in some of the lower mammals. It is more difficult to fix the heat period in women, since sex behavior in man is so largely dominated by cerebral states. The following points seem fairly well established:

1. Estrus, or heat, occurs synchronously with ripe ova and follicles. It is therefore probable that the latter initiate estrus (by hormone action). Estrus is not initiated by the corpus luteum, because the latter develops only after ovulation. Menstruation may be said to depend on the corpus luteum in the sense that the luteal body furnishes the necessary hormone stimulus for the growth of the uterine mucosa that must precede menstruation. In some species in which coitus is necessary for ovulation, the entire estrual cycle may be completed with ovulation and formation of corpora lutea, and in all species so far studied, estrus runs its course for several days before ovulation occurs. This seems to establish beyond question that the ripe follicles are the essential elements associated with or causative factors in the cycle.

2. Menstruation in the primates appears to be a degeneration process in the uterine mucosa, resulting from the absence of stimulus from the fertilized ovum and the atrophy or failure of hormones from the corpus luteum. Menstruation in the primates is, therefore, not analogous to the slight hemorrhage from the genital tract that occurs in dogs during pro-estrus and estrus, as this is not accompanied by degenerative changes in the uterine mucosa.

3. The estrual cycle, including menstruation in women, once established in its fixed rhythm by the cyclic hormones from the ripe ovarian follicles, may in some cases go on for a brief time after ovariectomy or be profoundly altered through nervous channels (suggestion). The vicarious menstruation from the nasal or intestinal mucosa are also disturbing and unexplained elements, especially since there appears to be

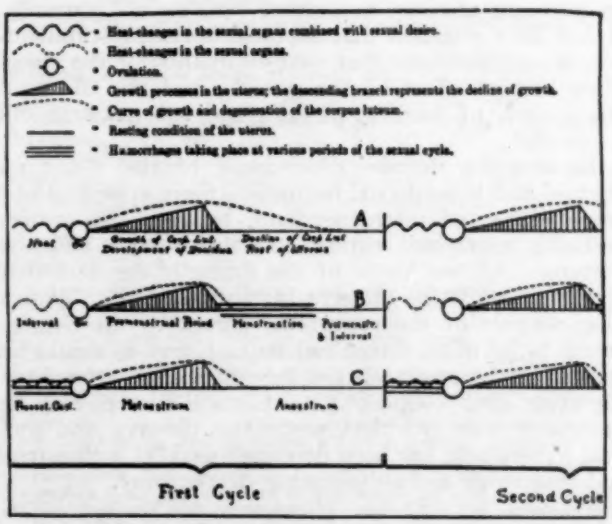

Fig. 3.—Sexual cycle: *A*, in the guinea-pig; *B*, in apes and women; *C*, in the dog (after Loeb).

no decrease in the blood coagulability or general capillary permeability parallel with menstruation.

4. The corpus luteum itself appears also to produce hormones having the following actions: (*a*) Luteal hormones stimulate or sensitize the uterine and tubal mucosa so that it reacts to the fertilized ovum with the formation of decidua. The luteal hormones are thus necessary for the early stages (from eight to ten days) of pregnancy. Extirpation of the corpora lutea

or of both ovaries after this period does not disturb the pregnancy. (*b*) Luteal hormones appear to suppress the maturation of ova and follicles during pregnancy. This point is not proved beyond a doubt, for the growing fetus or the placenta may produce substances that suppress follicular growth, and we have not yet shown that luteal extracts, when artificiallly administered, can check maturation. But cows may show a persistent corpus luteum parallel with absence of estrus, and it is reported that when this body is ruptured or removed, the normal estrual cycle returns. (*c*) There is some evidence that luteal hormones take some, though an insignificant, part in the hyperplasia of the mammary glands that occurs in estrus and in pregnancy.

The Ovaries and Nutrition.—I have referred to the fact that some of the ovarian hormones appear to have a slight stimulating action on the basal metabolic rate. This does not apply to the temporary hormones responsible for estrus. There is no change in the basal metabolism during estrus (man, dog), but in dogs there seems to be a slight postestrual depression of the metabolic rate lasting for several weeks (Kunde). The relation of this to the ovarian hormones is not clear.

On the other hand, normal ovarian functions are intimately dependent on the state of general nutrition of the individual. In partial starvation, the ovaries are among the first organs to show depression and atrophy. So far as we know, all dietary deficiency states and acute or chronic infections, if sufficiently pronounced, depress the ovarian functions.

Relation of Ovaries to Other Endocrine Glands.—Hypothyroidism impairs the ovaries. The same effect seems to be produced by impairment of the anterior lobe of the hypophysis, but this matter is still unsettled. The meaning of the slight hyperplasia of the hypophysis reported as occurring during pregnancy and after spaying is also not clear. From the fact that pineal tumors in man are at times associated with sexual precocity, it has been assumed that a pineal hormone stimulates ovarian maturation. But total extirpation of the pineal body has no effect on the gonads, and the effect on the gonads of feeding pineal gland substance is still undecided.

Besides the definite dependence of the ovary on thyroid and hypophysial hormones, there appears to be some degree of interdependence between the ovaries and the suprarenal cortex and the ovaries and the thymus. All we know of the latter is the fact that spaying retards the puberty involution of the thymus. The relation of the suprarenal cortex to the ovaries seems to be more direct and mutual, and it should be remembered that gonads and the suprarenal cortex have the same embryologic origin. Cortical tumors may be associated with or induce precocious puberty, and cortical hyperplasia has been described parallel with estrus and pregnancy and as following ovariectomy.

Relation of Ovarian Hormones to Senility.—The factors causing senility are largely unknown, but probably complex, partly physiologic, partly fortuitous (injuries). Because of the fundamental biologic importance of the sex urge and reproduction, it is not surprising that the laity should so readily accept the view that the gonad hormones prevent or delay senility or that age is primarily a question of active gonads. That biologists and physicians should at present regard this view more than as an experimental working hypothesis is more surprising. There is no reliable evidence that gonadectomy, per se, shortens the span of life or significantly reduces physical and mental efficiency. In man, the ovaries atrophy at the age of from 45 to 50, while the testes remain functional for ten or twenty years longer; but there is no corresponding difference in longevity and in physical or mental efficiency between men and women. Steinach [1] has reported "rejuvenation" of old female rats and guinea-pigs by roentgen irradiation of the ovaries (that is, destruction of follicles and increasing the theca celis) and by implantation of ovaries from young individuals. This line of work is still in the experimental stage. There is no reliable evidence that such measures prolong the life span beyond the average for the species. The same remark applies to the attempts at "rejuvenation" by ovarian extracts.

Relation Between Ovarian and Testicular Hormones.—The work of Lillie [2] on the freemartin was at first interpreted as demonstrating an antagonistic action of the hormones from the two sex glands, at least during intra-uterine life, and Steinach reported that a grafted testis will not grow in a female or an ovary graft in a male unless the original gonads had been previously removed. But it has now been demonstrated that ovarian grafts grow for a while in a normal male, and the testis grafts take and grow in a normal female, without interfering with the normal sex life (including pregnancy) of the female. True hermaphrodism points in the same direction, so that at present there is no clear evidence for a mutual antagonism, neutralization or suppression between the male and the female gonad hormones. When the two groups of hormones are present in the same individual during development, there will necessarily be rivalry and confusion in the anatomic sex characters in proportion as these characters differ with sex and in accordance with the quantitative preponderance of each group of hormones.

Action of Ovarian Extracts on Experimental Animals.—The attempts to elucidate the ovarian hormones by the administration to animals of crude or purified extracts of the ovary or its different anatomic constituents have been neither systematic nor extensive. As a result, this work to date is inconclusive and essentially negative. In experimental animals we have two definite and measurable features produced by ovariectomy; namely, the atrophy of the uterus and the absence of estrus. Both these features are susceptible of objective quantitative measurement and therefore suitable for conclusive determination of the efficacy of ovarian extracts doing all or some of the work of the normal ovary in situ. The menopause symptoms in women, being largely nervous and cardiovascular, are more difficult to measure quantitatively in experimental animals, even if they are present. The absence of menstruation below the primates renders it necessary to study this phase by experimental organotherapy on monkeys and man. But the use of menstruation as a direct measure of ovarian hormone functions is complicated by the fact that all the disorders of menstruation, except the physiologic and the artificial menopause, may be initiated by factors outside the ovary. The following are the essential lines of attack and their results, by methods of organotherapy in animals:

According to Fischera, feeding ovaries prevents the atrophy of the mammary glands following spaying. Marshall [3] and Jolly report that injection of extracts of estrual ovaries (dog) into female dogs produces a

1. Steinach: Verjüngung, Berlin, 1920.
2. Lillie: Biol. Bull. 44: 47, 1923.
3. Marshall, F. H. A.: Physiology of Reproduction, New York, 1922; Physiol. Rev. 3: 335 (July) 1923.

transient hyperemia of the genitalia, resembling heat; but there is no evidence that such injections produce actual estrus, if continued indefinitely. Löwy and Richter, and Beloff report that ovarian extracts increase the basal metabolic rate in spayed females, while corpus luteum extract is said to lower the basal metabolic rate. According to Youatt, feeding cows on milk from cows in heat induces estrus in the fed cows. Dixon reports that ovarian (but not luteal) extract injected intravenously increases pituitary secretion. This needs confirmation. A number of workers have reported that corpus luteum extract acts as a galactagogue. This also needs analysis and confirmation.

Hermann reported that administration of a pentaminphosphatid isolated from the corpus luteum produces temporary uterine hyperemia, while Seitz, Wintz and Fingerhut reported the isolation of two active substances from the ovaries, a luteolipoid which inhibits menstruation, and lipoprotein, which is said to stimulate the growth of the genitalia and increase menstruation. Igataki, working in Schaefer's laboratory, reports that an extract of theca cells inhibits uterine contractions, while similar extracts of the follicles initiate or augment uterine contractions. Macht and Matsumato report that corpus luteum extract produces very strong contractions of the vas deferens and the seminal vesicles. This is an interesting pharmacologic action, but can have no physiologic significance in a biologic sense. Allen, Doisy and their collaborators have reported that subcutaneous injections of liquor folliculi, and of extracts of follicular contents from ovaries of swine into spayed rats and mice induce estrus and mating reactions. Similar injections into immature females are reported to hasten sex maturation. Giving these materials by mouth is without effect. They consider the active substance in the follicular fluid to be the principal female sex hormone.

At present there is no reliable evidence that any or all of the foregoing ovarian extract effects are specific for the ovary. Until it has been conclusively shown in spayed females that these extracts prevent the atrophy of the uterus and initiate and maintain estrual periods typical for the species, it seems clear that experimental ovarian organotherapy has not been placed on a scientific basis. The reasons for the past failures may be inherent in the complexity of the ovarian hormones and their practical failure to be active when given by mouth; but the ovarian field can point to no such persistent and systematic work of hormone isolation as we have in the case of the thyroid and the pancreas.

SUMMARY

1. The sex life of the mammalian female is developed and maintained by the ovaries through continuous and temporary hormone mechanisms. Hormones acting more or less continuously develop and maintain the secondary sex organs and act to increase basal metabolism; temporary hormones from ripe follicles and corpus luteum initiate the estrual cycle, the early interaction between the fertilized ovum and the uterine mucosa, mammary gland hyperplasia and suppression of follicular growth.

2. Menstruation appears to be only indirectly dependent on the follicular and luteal hormones, in that it follows failure of fertilization and atrophy of corpus luteum spurium. But the hormones initiating estrus are necessary precursors to menstruation. The initial cause in all menstrual disorders may be outside the ovaries and hence not to be affected by ovarian therapy.

3. None of the ovarian hormones have so far been isolated, as determined by reliable biologic or chemical tests. And it is still an open question whether in the experimental animals any of the ovarian functions can be maintained by substitution therapy; that is, by feeding or injection of ovarian extracts.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

ERGOTOLE.—Extractum Ergotae Liquidum.—A liquid extract of ergot containing 19 per cent. of alcohol. It is standardized on the uterus of the virgin guinea-pig so that a 1:2,500 dilution of ergotole has the same activity as a 1:20,000,000 dilution of beta-iminazolylethylamine hydrochloride.

Actions and Uses.—The same as those of ergot.

Dosage.—Orally, from 1 to 4 Cc. (15 to 60 minims); hypodermically, from 0.3 to 1.2 Cc. (5 to 20 minims).

Manufactured by Sharp and Dohme, Baltimore. No U. S. patent. U. S. trademark 76,553.

Ampules Ergotole, 1 Cc.

Ergot is extracted with 50 per cent. alcohol; the alcohol is recovered by distillation in a partial vacuum; the aqueous residue is allowed to stand until the insoluble matter has settled out; the clear supernatant portion is drawn off, the residue is washed with several portions of water, and the washings are added to the first portion. The combined liquids are concentrated in a partial vacuum, and the alcohol is added. Two and one-half parts of standard ergot are used to produce one part of ergotole.

Ergotole is a brownish red liquid having the odor and taste of ergot.

STROPHANTHIN (See U. S. Pharmacopeia under Strophanthinum).

Hypodermic Tablets Strophanthin 1/100 grain-Lilly.—Prepared by Eli Lilly & Company, Indianapolis, Ind.

Hypodermic Tablets Strophanthin 1/120 grain-Lilly.—Prepared by Eli Lilly & Company, Indianapolis, Ind.

Hypodermic Tablets Strophanthin 1/200 grain (0.325 Mg.)-S. & D.—Prepared by Sharp & Dohme, Baltimore, Md.

OUABAIN, CRYSTALLIZED (See New and Nonofficial Remedies, 1924, page 110).

Ampoules Ouabain 0.0005 Gm. (1-128 grain)-Lilly: Ouabain crystallized 0.0005 Gm. in 2 Cc. of a buffered, sterile normal salt solution.

Prepared by Eli Lilly & Company, Indianapolis, Ind.

MERCURIC SALICYLATE (See New and Nonofficial Remedies, 1924, p. 203).

Compressible Capsules Mercury Salicylate "Synthetic," 1 grain, for Intramuscular Injection: Mercuric salicylate, 0.065 Gm. (1 grain) suspended in 1 Cc. of a mixture of benzoinated lard, 67 per cent.; peach kernel oil, 31 per cent.; camphor, 1 per cent.; phenol, 1 per cent.

Prepared by the Synthetic Drug Company, Toronto, Canada.

Compressible Capsules Mercury Salicylate "Synthetic," 1½ grains, for Intramuscular Injection: Mercuric salicylate, 0.1 Gm. (1½ grains) suspended in 1 Cc. of a mixture of benzoinated lard, 67 per cent.; peach kernel oil, 31 per cent.; camphor, 1 per cent.; phenol, 1 per cent.

Prepared by the Synthetic Drug Company, Toronto, Canada.

Compressible Capsules Mercury Salicylate "Synthetic," 2 grains, for Intramuscular Injection: Mercuric salicylate, 0.13 Gm. (2 grains) suspended in 1 Cc. of a mixture of benzoinated lard, 67 per cent., peach kernel oil, 31 per cent., camphor, 1 per cent., phenol, 1 per cent.

Prepared by the Synthetic Drug Company, Toronto, Canada.

Rôle of Scientific Research.—In medicine as elsewhere the rôle of scientific research is twofold. In the first place, it presents the indispensable means for the continued growth of our common body of knowledge, a process in which plodding talent must cooperate with creative genius. In the second place, it provides also the methods by which this knowledge can be most efficiently applied in solving the daily problems of life. We must, therefore, recognize the fundamental importance of the research spirit, for education in general as well as for medical training and practice.—C. M. Jackson: *Science* **60**:232 (Sept. 12) 1924.

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SATURDAY, DECEMBER 13, 1924

FAT EMBOLISM

Acute circulatory disturbances attributable to fat embolism have long been known to clinicians, but recent years have witnessed a recrudescence of interest in the subject. In reviewing our knowledge, Gauss [1] of Denver emphasizes the fact that the cause of fat embolism is always trauma. It may have been such a trauma as to have caused a fracture of bones, a type that is most likely to produce fat embolism; or it may be the trauma that has caused a blunt injury to adipose tissue, or a rupture of certain viscera rich in fat, such as the liver, although this type of case is comparatively rare; it may occur in certain surgical procedures in which considerable trauma is employed in the forcible correction of bones and joints, such as sometimes happens in the operation of osteoclasis. Osteomyelitis has been mentioned as a cause of fat embolism, but the cases in the literature have not been authenticated.

Early during the World War, the physiologist Prof. W. T. Porter of the Medical School of Harvard University proceeded to France, at the request of the Rockefeller Institute for Medical Research, to make observations on the possible causes of traumatic shock as it arises on the battle fields. He came to the conclusion in 1919 that fat embolism was one of the responsible factors in many cases at the front.[2] As the result of investigation over many decades, it had already been established, as Porter pointed out, that the fat in bones is in a condition peculiarly favorable to its entrance into the blood vessels after fracture. Large quantities of fat have repeatedly been found in the blood vessels under such circumstances. The entrance of fat into the blood vessels begins immediately after the wound. Frequently, if not always, there is fat embolism of the brain and other organs. These facts have often been observed in men; they are equally true of animals in which fat is injected into a vein. The outstanding features of Porter's studies were that a minute quantity of fat will produce the characteristic fall in blood pressure, and the concomitant symptoms of wound shock, whenever the blood supply to the vasomotor region is interrupted by the plugging of its capillaries. Critics of Porter's conclusions maintained that the shock of fat embolism is to be explained by embolism of the lung capillaries. This has been contradicted successfully, we believe, by Porter's experimental studies. The determination, whatever it may be, of the seat of the embolism does not imply, however, that all or even a majority of the cases of traumatic shock are explicable on the basis of fat embolism. It merely attests the possible involvement of definite areas of the cerebrospinal nervous structures.

Fat embolism is not merely a war-time occurrence; it may arise wherever persons are exposed to occupational hazards, with their contingent traumas. It has long been a matter of speculation as to precisely how the fat emboli gain entrance into the circulation. Gauss believes that the pathogenesis of the defect involves the injury of adipose tissue, sufficient to produce a disorganization of the supporting fibrous tissue stroma to liberate free fat into an injured area; the rupturing of a certain number of blood vessels, especially the veins within the abraded area, and the establishment of some mechanism that will cause the passage of the free fat into the open ends of the blood vessels. In the vast majority of injuries to the body, in fact, in almost every case in which there is hemorrhage into the tissues, Gauss adds, the first two conditions are present, namely, the presence of free fat and the presence of the open ends of blood vessels; yet, fat embolism does not result because the third condition is absent. Recalling that fat embolism occurs most frequently in fractures of the long bones, he finds the predisposing causes in the presence of blood vessels within calcified tubules in the bones. From the standpoint of Gauss, these osseous tubules lying within the bones and holding the blood vessels fast to their walls cannot collapse, and so these intra-osseous blood vessels are likewise prevented from collapsing. When a bone is broken sufficiently to open up some of these intra-osseous blood vessels, it is also broken sufficiently to cause a liberation of medullary fat, and, under these conditions, when the ends of the blood vessels are held open by their rigid perivascular sheaths, the third necessary condition is provided for effecting the entry of fat globules into the circulation. Then the same physiologic forces that maintain the venous circulation operate to draw free fat into the wide open ends of the blood vessels; namely, the regional muscular movements, the negative venous pressure in the veins and other forces.

These studies have traced the migration of fat emboli throughout the body. In the heart, they may produce cardiac embarrassment; in the kidneys, a train of disorganizing changes may be initiated. However, it is in the central nervous system above all that the most distressing anatomic disturbance and consequent functional

1. Gauss, Harry: The Pathology of Fat Embolism, Arch. Surg. 9: 593 (Nov.) 1924.
2. Porter, W. T.: Traumatic Shock, Harvey Lectures, 1917-1919, p. 21.

manifestations may appear. Multiple lesions may be secondary to fat embolism.[3] Every part of the nervous system may be involved, leading to occasional consequences that are often attributed to entirely different causes. This has been demonstrably true of cases of delirium and coma at first glance. The diagnosis of alcoholism has doubtless been made more than once in ignorance of the real pathology of the symptoms and in undeserved reflection on a temperate patient. The time has arrived for clinicians to realize widely that fat emboli may mechanically irritate the nervous structures in which they lodge, and then cut off the blood supply and interfere with the nutrition of the cell. Later, as the secondary changes of edema, hemorrhage and focal necrosis appear, the nerve cells and their axons undergo necrosis and finally death; thus is instituted a disorganization of the central nervous system leading to its complete functional collapse. Fat may thus become a baneful as well as a beneficial component of the body—depending on where and in what form it becomes located.

THE EPIDEMIOLOGY OF COLDS

It is singular that until recently no systematic epidemiologic study has been made of the minor respiratory ailments known as common colds. In most parts of the temperate zone they are by far the most prevalent form of disease, and they are probably responsible for a larger loss of working time and efficiency than any other human disorder. It has not been known whether all types of cold are contagious, whether definite seasonal and geographic relations exist, or what the connection may be between colds and the more seriously regarded respiratory infections, such as influenza, tuberculosis and pneumonia. Bacteriology has thus far not made much advance in elucidating the problem of colds, and it is high time that other modes of attack were attempted. Jordan and his associates [4] in 1920-1921 gathered data on the occurrence and nature of colds among more than 2,300 college students in the three widely separated communities of Chicago, Galveston and Pasadena. The observations, while covering a relatively short period and a limited number of localities, brought out a number of interesting epidemiologic facts respecting yearly frequency per person, seasonal occurrence, and a rather surprising independence of climatic conditions.

A more comprehensive program was inaugurated by the United States Public Health Service in 1923, and a preliminary and progress report has just been published.[5] The observations discussed were made with the continuous cooperation of about 13,000 persons in eleven different localities from Massachusetts to California, and include biweekly reports on the occurrence of colds in the individual reporting, together with a large number of pertinent details. The preliminary report covers the period from October, 1923, to June, 1924, and contains many suggestive data. The most noteworthy indication obtained by the analysis of this material is the remarkable synchronicity in the rise and fall of these respiratory affections in the various localities under observation. A high incidence in the latter part of October was followed in all the localities (e. g., Boston, Baltimore, Chicago, New Orleans, San Francisco) by a decline, which continued until the latter part of December; then a sharp rise occurred, which in all the localities save one reached its peak in the first part of January; this was succeeded by a gradual decline in nearly all the localities until the end of the period. Another point of considerable interest bearing on the evolution of this and other collections of similar data is evidence that the conditions as reported by the individual are fairly accurate and can be depended on for statistical analysis. The morbidity rate was very high. The number of colds in one group believed to be representative during a five and one-half month period averaged about two per person.

It is to be hoped that these promising studies may be continued as successfully as they have been begun. To insure their fullest value, the investigation should probably be continued through three full seasons.

GASTRIC SECRETION IN SLEEP

The conception of life processes as an alternating sequence of activity and complete rest is, in some instances at least, fallacious. If it were correct, it would imply that inactivity is essentially the expression of a lack of stimulus to performance; whereas activity on this basis would ensue only when a positive exciting factor is supplied. However, in the living body activities occasionally become pronounced when some interference to their occurrence is removed, just as a car starts to run down hill as soon as the brake is released. Bayliss [1] has long since pointed out that when a process of any kind takes place continuously of itself without intervention from without, it is clear that, for purposes of due regulation in the living organism, there must be means of modifying it in both directions; there must be some power of either increasing it or decreasing it according to necessity.

There are functions in the body that have a tendency to automatic continuance. They are not always in evidence, not because the capacity of function is lacking but rather because it is inhibited. Inhibition is a physiologic manifestation with which we have been concerned all too little. The uninhibited heart "runs away" with itself in a greatly accelerated beat. Inhibition here supplies a beneficent regulation through the vagus nerve.

3. Gauss, Harvey: Studies in Cerebral Fat Embolism with Reference to the Pathology of Delirium and Coma, Arch. Int. Med. **18**: 76 (July) 1916.

4. Jordan, E. O.; Norton, J. F., and Sharp, W. B.: J. Infect. Dis. **33**: 416 (Nov.) 1923.

5. Townsend, J. G.: Pub. Health Rep. **39**: 2669 (Oct. 24) 1924.

1. Bayliss, W. M.: Principles of General Physiology, London, 1915, p. 377.

Of late we have come to realize that the gastric secretion is in some degree continuous, and that it may be greatly augmented when the normal inhibitions are removed. It might be expected that, in sleep, inhibitory influences would be decreased to a considerable extent. This seems, indeed, to be the case according to recent observations on man by Johnston and Washeim [2] at the University of Georgia. Just as normal sleep is known to increase the tonus and contractions of the stomach, presumably by eliminating the inhibitions to activity that are effective during wakefulness, so it increases the gastric secretion. Preparation for sleep results in a rise in gastric acidity, which continues for an hour or more after the onset of sleep. This rise in acidity is generally highest when the intensity of sleep is greatest. Sleep causes considerable delay of emptying of the stomach, a marked rise in acidity, and a delay in the fall of gastric acidity, when a test meal is taken just before retiring. It is a significant fact, further, that the gastric glands are similarly influenced by the state of hypnosis, even in the absence of all suggestion of food.[3] Indeed, the gastric glands respond more promptly to a test meal actually ingested when a person is under hypnosis than when he is in the waking stage.

Sleep not only abolishes certain muscular and mental activities; it also tends to remove the inhibition that the higher centers seem to maintain over the gastric secretory mechanism in the waking state. While the body as a whole rests, digestion does not necessarily also cease, for some of its normal restraints are then removed.

DISPENSING WITH THE BRAIN

One of the surprises that come early to almost every intelligent student of physiology is the extent to which seemingly good muscular performance can go on without the participation of the brain and its appendages. Decerebrate frogs would ordinarily pass for perfect animals if they were not inspected too rigorously. They are capable of well coordinated movements that often indicate a remarkable complexity of interdependent activities and sequences. Our appreciation of such reactions is, if anything, enhanced by the newer knowledge of what the normal movement of a limb really involves. There is not merely flexion due to the active contraction of a muscle attached to a bone. Skeletal muscles are generally organized into opposing groups. The contraction of one of these involves the relaxation or inhibition of its opponent; otherwise there might be much futile competition of antagonistic muscles, such as those that respectively open and close the hand or flex and extend an arm. This adjustment is the principle of "reciprocal innervation," whereby, when any muscles are thrown into contraction through the agency of the central nervous system, their opponent contractile structures are simultaneously inhibited.

The brain is not required for the rhythmic sequence of flexion and extension that constitutes the "reflex step." Reflex stepping can be elicited in decerebrate animals when suitable stimuli are applied to the limbs and feet; and it is well known that the nervous mechanism in the lumbar and sacral regions of the cord is in itself sufficient to produce the rhythm of stepping. Locomotion, the transition of the entire body from place to place in walking or running, involves a far more complex series of movements in which there is an ordered sequence of events—a coordinated movement of progression. According to elaborate investigations of Laughton [1] at the University of Western Toronto Medical School, at London, Ontario, these phenomena can no longer be obtained in the absence of the cerebral structures. The cerebellum is not an essential factor; but the nervous mechanism that functions in making possible the coordinated movements of progression is so arranged, in the cat and dog, that the caudal two thirds of the thalamus has to be intact for it to function normally. The corresponding mechanism in the rabbit is so arranged that the cephalic two thirds of the pontile region must be intact for normal function.

However necessary some cerebral mechanism may be for the guidance and control of the movements of progression, the cerebral hemispheres are not of primary importance. Laughton pictures the act of progression as highly coordinated, the complex movements depending for their execution on the integrated action of the many nerve centers located at different levels in the cerebrospinal axis. Progression is the result of a sequence of events performed in part consciously and in part unconsciously. Any interruption of this normal march of events results in changes in the coordinated movements and, if the interruption is sufficiently great, the movements are eliminated. The harmonious action of the nervous system depends on the integrated action of all its parts. During its normal functioning, some impulses are inhibited while the passage of others is facilitated and they dominate the reflex pathways.

It may seem to some persons that, by the development of our knowledge of the function of the lower centers, little is being left for the higher brain structures to do. After all, the body is not merely a reflex mechanism wherein nervous stimulation and muscular response are the outstanding features. However admirable a brainless mechanism may be in the perfection of its remarkable reactions, it still lacks the power to profit by experience. The ability to learn and acquire new reactions is what makes the cerebrum dominant in the nervous system. Stiles has said that to remove the cerebrum is to rob the individual of what it has acquired in living its own life. What remains is the common heritage of the race.

2. Johnston, R. L., and Washeim, H.: Studies in Gastric Secretion, II, Gastric Secretion in Sleep, Am. J. Physiol. **70**: 247 (Oct.) 1924.
3. Luckhardt, A. B., and Johnston, R. L.: Studies in Gastric Secretion, I, The Psychic Secretion of the Gastric Juice Under Hypnosis, Am. J. Physiol. **70**: 174 (Sept.) 1924.

1. Laughton, N. B.: Studies on the Nervous Regulation of Progression in Mammals, Am. J. Physiol. **70**: 358 (Oct.) 1924.

Current Comment

THE ANNUAL REMITTANCE SLIP

In this issue of THE JOURNAL is inserted the annual remittance slip with which Fellows and subscribers may remit the sum of their subscription for THE JOURNAL, as well as the annual dues for fellowship in the American Medical Association. As has been pointed out in previous years, the use of this slip by any considerable number of persons represents a distinct saving to the Association in the sending of bills and in the clerical work of the subscription department and cashier's office. During the last few years, an increasing number of those interested have availed themselves of this method of making their payments. To these, the Association extends its thanks and appreciation. In view of the fact that such a saving permits extension of the service which the offices are able to render to Fellows and subscribers, the thanks of all who benefit are likewise due those who show their appreciation by this slight extra attention. Space is also afforded on the slip to subscribe for the special periodicals which the Association publishes in various fields, and for *Hygeia*, the Journal of Individual and Community Health, which is extending the message of scientific and preventive medicine to the public. It is hoped that this year many more Fellows and subscribers will use the inserted remittance slip.

PNEUMONIC PLAGUE

The first appearance of pneumonic plague in Los Angeles was confirmed by laboratory tests, October 31, although the first actual case had evidently developed about October 19. The district in which the outbreak occurred was an area comprising about eight blocks in the Mexican quarters of Los Angeles, about 2 miles from the business district. All of the cases could be traced either directly or indirectly to contact with the original case of the disease. As has been reported in the news columns of THE JOURNAL, the state health officer of California immediately proceeded to Los Angeles, and the United States Public Health Service assigned two members of its staff, who were experienced in the control of plague, to cooperate with the state and local health authorities and to render any assistance necessary. As a result, the preventive measures instituted, November 2, seem to have been effective, and the condition appears at this time to be under control. However, as reported elsewhere in our columns, plague infected rats have been found in various parts of Los Angeles. As announced by the state health officer in a recent bulletin on the subject, the campaign for the eradication of rodents has only begun. If this menacing disease is to be brought under control, persistent and continual attack against plague infected rodents is essential. The California State Board of Health is now in full charge of plague eradicating measures in Los Angeles in cooperation with local health authorities, and local appropriations for the conduct of the eradicative work have been provided. The United States Public Health Service is maintaining a commissioned officer at Los Angeles in order to be informed as to the interstate aspects of the situation, and he is attending to the fumigation of vessels arriving at the port of San Pedro. As is also announced elsewhere, several foreign countries and, in particular, Mexico, have quarantined against vessels coming from the port of Los Angeles. Obviously, it is to the interest of the city to avail itself of every possible facility offered by the local, state and national governments to clear up the plague situation as rapidly as possible. No doubt, such measures will be adopted to prevent the occurrence at some future date of epidemics that may become far more serious than the one in Oakland a few years ago and the more recent outbreak in Los Angeles.

PERIODIC PHYSICAL EXAMINATIONS

About 1870, a Dr. Dobell of England suggested that periodic physical examinations be provided by life insurance companies to the holders of policies. In 1900, Dr. George M. Gould read before the Section on Practice of Medicine of the American Medical Association a paper which contains practically all the valid arguments that have since been used to urge such examinations on the medical profession and on the public. Since that date, papers have appeared at an increasing rate, one of the most significant, as pointed out by Dr. E. B. Edie,[1] being the recommendation by Dr. Burnside Foster in 1909 to the Association of Life Insurance Medical Directors that such examinations be given to holders of policies every five years. As stated editorially a few weeks ago, the American Medical Association is cooperating actively in plans for promoting periodic health examinations among the public, and in devising methods whereby this function of the family physician will be retained in his hands, rather than delegated to commercial or pseudophilanthropic organizations not adequately controlled. In his consideration of the subject, Dr. Edie, as a member of the Committee on Public Relations of the Pennsylvania State Medical Society, contends that any practitioner can plan and conduct a campaign in his own community with the assurance that some citizens will be found favorable to the movement and that a gradually increasing portion of the population will seek such examinations. The individual physician must be ready to give his own patients a type of physical examination that will be above reproach.[2] It should be needless at this time to urge on any physician the importance of this campaign as a means for prolonging life, but it seems to be necessary to urge that the individual physician become thoroughly interested, instead of permitting such examinations to become the business of those who are only too willing to exploit the practice of medicine. "The acid test of the physician's faith in

1. Edie, E. B.: Periodic Health Examinations, Internat. Clin. 4:91, 1924.

2. The Bureau of Health and Public Instruction of the American Medical Association has prepared a standard blank for conducting such examinations, and has available reprints of an article concerning testing methods, samples of which will be sent on request.

health examinations," says Dr. Edie, "indeed, of his faith in the science and art of medicine, is that he has an annual examination made of himself." As was described a few months ago, one hundred members of the Kings County Medical Society in Brooklyn submitted themselves to such examinations, and the results published were a practical means of focusing public attention on the plan. It is time that physicians everywhere rise to the occasion and become a part of the leadership in this movement.

THE DANISH GOLD TREATMENT OF TUBERCULOSIS

Hardly a year passes but that the announcement is made of some new method of treating tuberculosis. The hope that springs eternal in the breast of the consumptive is stimulated again, only to end in the apparently inevitable disappointment that has ensued so frequently. The most recent method to receive the sensational publicity duly accorded any venture in the treatment of tuberculosis is a preparation of gold, advanced in Denmark under the name "sanocrysin." As reported in the *Ugeskrift for Læger,* meetings were held in Copenhagen, October 28 and 29, at which investigators of the new remedy gave their results to the Danish medical profession. Professor Moellgaard, the originator of the remedy, described its production, and stated that no reaction follows the introduction into the body of this remedy by the intravenous method, provided the tissues are healthy; but if they are tuberculous, a violent reaction ensues. It is assumed that the reaction is the result of release of material from tubercle bacilli that are destroyed by the remedy. The reaction is opposed by the injection of a specially prepared horse serum which, Moellgaard believes, already has greatly reduced the severity of the phenomena of the reaction. At the conference in Copenhagen, Moellgaard described the complete clinical recovery of two monkeys with severe tuberculous infection, following the use of his method. Several well known Danish clinicians reported brilliant results in the cases of many patients. However, there were several instances in which death had followed the administration of the remedy, presumably on account of difficulty in determining accurately the proper dosage. In discussing this work, the *British Medical Journal* points out that the most cautious of the speakers was Professor Moellgaard himself, and that he had been exceedingly reserved in his forecasts of the efficacy of "sanocrysin." In any event, it is also reported that Professor Moellgaard has asked the Medical Research Council of Great Britain to organize an investigation of the properties of the remedy. No doubt, information will become available in the near future which will indicate more adequately whether or not the drug has any real virtues in a condition in which heretofore all remedies heralded as specific have failed.

Pathology a Science.—The time has now arrived when pathology must recognize that it is a science which can and ought to stand on its own feet and pursue its own end, which is the study of pathology, not the study of medicine and surgery.—Boycott, A. E.: *Lancet* **2**:998 (Nov. 15) 1924.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Sanipractor Returns to Washington.—"Dr." W. L. Martin, Long Beach, who was arrested, October 8 and 24, on a charge of practicing medicine without a license, pleaded guilty, it is reported, to both charges and was sentenced to pay a fine of $100 and to sixty days in jail. Martin claims to have graduated from the American University of Sanipractic, Seattle (THE JOURNAL, October 25, p. 1344). His jail sentence having been suspended, Martin closed his office, stating that he would return to the state of Washington immediately.

Supervisors Control Board of Health.—The passing of charter amendment No. 33, it is reported, places the control of the board of health, San Francisco, under the direct supervision of the board of supervisors, including all salaries paid to members and employees of this department. Heretofore the expenditure of a lump sum appropriation rested with the department head, and any surplus might be used as he saw fit. The amendment will require, among other things, that all surplus money not expended for authorized projects be returned to the general fund.

Dr. Reuben Adcox Ordained Minister of Spiritualism.—In an investigation of certain "spiritual" organizations, it has come to the attention of Attorney General Webb, San Francisco, that Reuben Adcox, alias Robert Adcox, alleged ring leader in the diploma mill, was ordained a "minister of the gospel of spiritualism." At the hearing before the state board at which Adcox's license to practice medicine was revoked, there was introduced in evidence his certificate of ordination in the First Spiritual Church of San Francisco, subscribed and sworn to, April 5, 1918. The asserted boasts of leaders of the diploma mill that they could furnish any one of 640 degrees incite wonder now as to whether possibly similar "certificates of ordination" were disposed of by the diploma mill conspirators.

DISTRICT OF COLUMBIA

Society News.—Surg. Gen. Edward R. Stitt, U. S. Navy, addressed the Medical Society of the District of Columbia, November 26. Major Norman T. Kirk, U. S. Army, spoke on the "Treatment of Fracture of the Shaft of the Femur by the Suspension Traction Method."—Dr. Frank Smithies, professor of medicine, University of Illinois College of Medicine, Chicago, addressed the Medical Society of the District of Columbia, December 5, on "The Origin and Development of Ethics in Medicine and the Influence of Ethical Formulas on Modern Practice."

ILLINOIS

Dr. Tharp Arraigned.—It is reported that a "Dr." W. S. Tharp was arraigned before Magistrate Warren, Centralia, November 25, for practicing medicine without a license. Dr. Tharp had a tent, it is said, in Southtown where he treated "chronic diseases" for several weeks, having an assistant by the name of James whose hair was in two long braids. One of the doctor's patients, an infant, seriously ill, was brought to the attention of the Centralia Medical Society. There is no Dr. W. S. Tharp licensed to practice in Illinois in the last edition of the American Medical Directory.

Report of State Laboratory.—The state diagnostic laboratory examined 85,877 specimens in the last fiscal year, 40 per cent. of which were for the diagnosis of diphtheria and 33 per cent. for the diagnosis of syphilis. Kane County submitted more specimens than any other county; its rate was seventy specimens per thousand population. Macon County was second. Pike County sent only seventeen specimens and Calhoun but six, during the year. The cost of examining a specimen in the state laboratory was about 47 cents, and 6 per cent. of the public health appropriations for Illinois went to the laboratory. According to the Illinois State Department of Public Health, 41 per cent. of the public health appropriations in New York go to the diagnostic laboratory.

Chicago

Loyola Buys South Side Property.—Loyola University announces the purchase of the property at 2709 Prairie Avenue, on which there is now a 25-room stone building. The purchase was made for the school of medicine, to be used for the upper classes in connection with their clinical work at Mercy Hospital.

Hospital News.—The Edward C. Seufert Memorial Clinic of the American Hospital, Chicago, will be dedicated, December 24, and a dinner in honor of the occasion will be given at the Sovereign Hotel. Among the guests will be Dr. Jeremiah H. Walsh, president, Chicago Medical Society; Dr. Charles J. Whalen, editor, *Illinois Medical Journal;* Dr. Jacob C. Krafft, president-elect, Illinois Medical Society; Dr. Solomon Greenspahn, trustee of the hospital; Dr. Frank B. Earle, emeritus professor of pediatrics, University of Illinois College of Medicine, and Mr. A. M. Shelton, state director of registration and education. Dr. Max Thorek will be toastmaster.

Pasteur Monument and Scholarship.—A committee of more than 100 prominent Chicagoans, the chairman of which is Dr. Frank Billings, is working to raise a fund of $100,000 to establish in Chicago a monument to Pasteur and a research scholarship, national in scope, which will be open to all American students. A fountain surmounted by a bust of Pasteur, has been submitted by the French sculptor, Leon Hormant, and a special committee has undertaken to select a site for the monument. Universities are responding to the research scholarship, appointing their own Pasteur committees to decide what part they will take in this memorial campaign. The University of California heads the list of those who have responded to the appeal. Headquarters for the campaign are at 108 South La Salle Street.

Society News.—The December meeting of the Chicago Council of Medical Women will be omitted because of Christmas, and the next meeting will be held, January 26, at 40 East Erie Street.——At a meeting of the Chicago Tuberculosis Society, December 11, Dr. James S. Pritchard, Battle Creek, Mich., spoke on "Thoracic Conditions Simulating Pulmonary Tuberculosis."——The Chicago Society of Anesthetists and the Chicago Dental Society will hold a joint meeting, December 16, at 31 West Lake Street, at which Dr. Elmer I. McKesson, Toledo, Ohio, will speak on "Gas, Oxygen Anesthesia in Oral Surgery (Illustrated)."——Brief reports of the postoperative findings of patients with spastic paralysis operated on recently in Chicago by Dr. N. D. Royle, Sydney, Australia, were made at the Chicago Orthopedic Club, December 12, by Drs. Moore, Jacobs, Parker, Lewin and Ryerson. Among others who took part in the discussion at this meeting were Dr. Hugh T. Patrick, Dr. John Ridlon and A. J. Carlson, Ph.D.

INDIANA

Smallpox at Hammond.—The Edison Public School, Hammond, was closed, November 21, on account of smallpox. The building was opened the following week, but only children who had been vaccinated were permitted to return. There were reported seventeen cases of smallpox on the south side of that city.

State Society Appoints Executive Secretary.—Dr. Samuel E. Earp, president of the Indiana State Medical Association, announced, November 28, it is reported, that Thomas A. Hendricks had been appointed executive secretary of the state society at a meeting of the council at Indianapolis. Mr. Hendricks was graduated from Princeton University in 1915 and served with the Eighty-Fourth Division in France during the World War. He has for several years been a member of the staff of the Indianapolis *News.*

Personal.—Dr. James M. Dinnen, Fort Wayne, has been appointed chief general surgeon for the Nickel Plate Railroad district, comprising the original Nickel Plate system, the L. E. & W. system and the Clover Leaf system.——Dr. Alfred Henry, Indianapolis, has been appointed director of the City Tuberculosis Clinics. There are five tuberculosis clinics in the city.——Dr. George Harrison Davis, Union City, has been appointed secretary of the board of health of that city, to succeed Dr. Robert W. Reid, resigned.

IOWA

Personal.—Dr. Roscoe P. Carney, Davenport, has been elected president of the Alumni Association of St. Ambrose College.——Dr. Norman W. Loud, assistant director of student health service, University of Iowa, Iowa City, has resigned to become director of laboratories at a hospital in Colorado Springs, Colo.——Dr. John F. Morse, for several years medical superintendent of the Hinsdale Sanitarium, Hinsdale, Ill., has been appointed medical superintendent of the Iowa Sanitarium and Hospital at Nevada.

KANSAS

Resigns from State Board.—Dr. Jacob J. Entz, Wichita, submitted his resignation to the governor, November 28, it is reported, as a member and epidemiologist of the state board of health.

Brinkley's Extradition Requested.—California officials, November 12, requested the extradition of Dr. John R. Brinkley, Milford, "gland specialist." It is reported that Brinkley has a certificate from a Kansas City diploma mill and that he violated the California law when he sought admission to practice in that state (THE JOURNAL, January 12, p. 132).

LOUISIANA

Better Milk for New Orleans.—The board of health of New Orleans has formally approved a measure assuring safe milk for that city. The measure provides for compulsory pasteurization of all milk sold in the city except Grade A raw or certified milk, and the latter must have a bacterial count of not more than 50,000. The new ordinance, which becomes effective Jan. 1, 1926, it is reported, was adopted after consultation with experts in the U. S. Public Health Service, the Louisiana Live Stock Sanitary Board and others. It is in line with regulations recently adopted by twenty-four cities in North Carolina, Texas and Alabama.

Hospital News.—Ceremonies held Thanksgiving Day marked the beginning of the erection of a $2,000,000 Baptist Hospital at New Orleans. The initial outlay will be for the first unit of the main hospital, with 250 beds, a nurses' home, isolation building and heating plant. Eventually the hospital will be enlarged to 600 beds. The site, at Napoleon, Clara, Magnolia and Cadiz streets, was given by citizens of New Orleans, the fund being raised through the Association of Commerce. This, it is reported, will be the twenty-fifth Baptist hospital in the Southern states.——The new main building of the Hotel Dieu, New Orleans, was dedicated, November 23.

MARYLAND

Artificial Speech Apparatus.—At the meeting of the Oto-Laryngological Section of the Baltimore City Medical Society, Dr. John E. MacKenty, New York, discussed recent experiments with artificial larynges. Four patients thus rehabilitated were presented.

Report of Dean at Johns Hopkins.—Dr. Lewis H. Weed, dean, Johns Hopkins University Medical Department, Baltimore, in his first annual report, indicates the urgent need of a larger endowment to provide for increased salaries for the teaching staff, and for the complete rebuilding and enlargement of the general service in medicine and surgery. Some of the subdepartments also are inadequately financed and have too few beds and laboratory facilities for teaching and must be enlarged and improved. Most important from the standpoint of the intellectual life of the medical community, is the erection of a central library sufficiently endowed to serve the medical school and the school of hygiene and public health. General satisfaction prevails with the decreased enrolment of medical students, due to special limitations of classes, and the adoption of higher standards of promotion in the lower classes. A system of voluntary preceptorship has been adopted, so students may discuss their work with sympathetic faculty members. Further changes in the curriculum allow students more time for elective studies in their senior year.

MASSACHUSETTS

The Harvard Medical Dormitory.—An appeal to the general public for the Harvard Medical School dormitory has been released, a quiet canvass during the last year among physicians and their friends having resulted in gifts totaling almost $250,000. The university has agreed to invest in addition, from permanent funds of the school, about $300,000, so there remains only about $550,000 to be raised. The executive committee of the Harvard Medical School Dormitory Fund, of which Dr. Francis M. Rackemann is secretary, comprises also Drs. Homer Gage, Elliott P. Joslin, James H. Means, William C. Quinby and Mr. Phillips Ketchum.

Society News.—Dr. William F. Braasch, chief of the urologic department, Mayo Clinic, Rochester, Minn., addressed

the Springfield Academy of Medicine, November 11, on "Possible Clinical Errors from Laboratory Data," with lantern slide illustrations.——Dr. William R. MacAusland, Boston, addressed the Lynn Medical Fraternity at its regular meeting, October 29, on the principles governing the determination of posture in the fixation of fractures involving the long bones with joint complications, and Dr. William E. Preble, Boston, discussed "Chronic Infectious Arthritis."——Dr. Edwin H. Place, Boston, addressed the Boston Association for the Prevention and Relief of Heart Disease, November 20, on "The Heart in Acute Infections."

University News. — The following reappointments and appointments in Harvard Medical School for one year, from September 1, have been announced:

Dr. Francis Winslow Palfrey, instructor in medicine; Dr. Frank Dennette Adams, assistant in medicine; Drs. Harry Philip Cahill, Frederick Leon Bogan, Philip Edward Meltzer, Oliver Ames Lothrop, Charles Terrell Porter, Fred Albert Simmons, Harold Grant Tobey, instructors in otology; Drs. Charles Orrin Day and Harry Paul Finck, assistants in otology; Dr. Edward Delos Churchill, instructor in surgery; Dr. Fletcher Hatch Colby, assistant in genito-urinary surgery. New appointments: Dr. Frederick Ronald Brown, assistant in medicine; Dr. William Lawrence McNamara, assistant in pathology; Dr. Sidney William Britton, research fellow in physiology, and Dr. Grantley Walder Taylor, alumni assistant in surgery.

MICHIGAN

Chiropractor Jailed.—E. M. Clark, Chiropractor, was convicted at Hart, November 18, and sentenced to six months in the county jail for practicing without a license, it is reported.

Committee to Organize Clinical Material.—The president of the Wayne County Medical Society has appointed a committee to formulate plans by which clinical material in Detroit may be organized properly. Dr. Alfred H. Whitaker of the Receiving Hospital is chairman, the committee comprising representatives from staffs of various hospitals. The *Bulletin of the Wayne County Medical Society* says that this is the initial step in the effort to make Detroit a medical center.

Postgraduate Conference.—Under the auspices of the Michigan State Medical Society and the county societies of the Seventh Councilor District, a postgraduate medical conference was held at Port Huron, December 10. Among others, Dr. Angus McLean, Detroit, past president of the state medical society, spoke on "Diagnosis of Intestinal Obstruction"; Dr. Hugo A. Freund, Detroit, on "Therapeutic Agents —Gentian Violet, Mercurochrome, Etc.," and Dr. Ward F. Seeley on "What Modern Obstetrical Care Implies."

MINNESOTA

Smallpox in Twin Cities.—The virulent type of smallpox that has existed in St. Paul and Minneapolis for months is still there, and the question has been raised which city is infecting the other. According to press reports, November 25, there had been since the first of the year 705 cases in St. Paul and 578 in Minneapolis. There had then been in November, 209 cases in Minneapolis and forty deaths, and in St. Paul sixty-two cases and five deaths. It appears that St. Paul had 455 cases of mild smallpox in the first five months of the year with no deaths, and in the same period Minneapolis had 106 cases and two deaths. There have been since May 472 cases with seventy-six deaths in Minneapolis.

MISSOURI

Society News.—At a joint meeting of the Jackson County Medical Society with the Radiological Society of North America, Kansas City, December 9, Dr. Benjamin H. Orndoff, professor of roentgenology, Loyola University School of Medicine, Chicago, gave an address on "Breast Malignancies," and Dr. Lewis G. Cole, professor of roentgenology, Cornell University Medical College, New York, on "The Roentgen Diagnosis, Classification and Prognosis of Pulmonary Tuberculosis." At a recent meeting of the Jackson County Medical Society, Dr. Charles C. Dennie was elected president; Dr. Robert M. Schauffler, vice president; Dr. Albert J. Welch, treasurer, and Dr. Claude J. Hunt, secretary.

MONTANA

Infantile Paralysis Clinic.—According to the secretary of the infantile paralysis commission in Missoula, Dr. Allen R. Foss, fifty-one victims of the recent epidemic of infantile paralysis had been carefully examined, November 26, and treatment of the various paralyses begun. No charge is being made for treatment.

NEBRASKA

Society News.—Dr. Albert R. Hornbeck, Murdock, was elected president of the Cass County Medical Society at the meeting at Weeping Water, November 5, and Dr. Chester H. Longacre, Eagle, was reelected secretary-treasurer. Dr. Frederick F. Teal, Lincoln, addressed the society on "Causes and Treatment of Sinus Infection."——Dr. Hulda Oelenberger, a recent graduate of the University of Saratoff, Russia, and now of Lincoln, was the guest of the Nebraska Association of Medical Women at the semiannual meeting in Lincoln, November 8.

NEW JERSEY

Hospital News.—Dr. John J. Nevin, Jersey City, has retired as medical director of the Jersey City Hospital, and Dr. Seth B. Sprague has been appointed head of the orthopedic department to succeed the late Dr. Henry Bogardus.

Society News.—At the annual meeting of the Gloucester County Medical Society, Woodbury, November 20, Dr. John A. Kolmer, Philadelphia, spoke on "Serum Sickness," and Dr. Duncan Campbell, Woodbury, on "Preventive Medicine."

NEW YORK

New Tuberculosis Sanatorium.—A new tuberculosis sanatorium has been started at Saranac Lake for patients who are temporarily without funds. The sanatorium will be called the Northwood Home and will be nonsectarian. It is an outgrowth of the Adirondack Fund for the tuberculous started at Lake Placid in 1920.

Typhoid Epidemic.—From November 10 to 15, thirty-five cases of typhoid fever were reported from villages along the south shore of Long Island. Rockville Center, Valley Stream, Lynbrook, Brightwaters, Freeport and Islip have reported a number of cases. The practically simultaneous appearance of all the cases indicates a single source of infection. Most of the villages affected have not proper sewer systems.

Personal.—Dr. Joseph S. Lawrence of the state department of health has been appointed, by the council of the Medical Society of the State of New York, executive officer of the society. Dr. Lawrence will make his headquarters in Albany, and while for the present he will concern himself principally with medical legislation under the direction of the chairman of the committee on legislation, he will also assist local leaders of county societies in their problems.——The city of Watervliet has selected Dr. George B. Grady to supervise the new child welfare station started, November 17.——Dr. James R. Lisa has been appointed director of the Bender Hygiene Laboratory at Albany in place of Dr. Ellis Kellert, who has taken charge of the laboratory of the city and County of Schenectady.——Dr. Elliott G. Brackett, Boston, spoke before the New York Academy of Medicine, November 2, on "The Rise and Development of Orthopedic Surgery," and Kimball Young, Ph.D., of the University of Oregon, discussed the paper of Dr. Leon Pierce Clark on "A Psychological Study of Lewis Carroll and His Works."

Watertown's New Liquor Ordinance.—The council of the city of Watertown unanimously passed an ordinance, November 24, which, among other things, provides that pharmacists shall file with the city clerk monthly a record of all prescriptions for liquor showing the amount, kind, date, to whom sold, and the physician's name; that every pharmacist shall keep a similar record himself, and that prescriptions filed with the city clerk shall be open for inspection by the city manager or chief of police. There was vigorous opposition to this ordinance by the city medical society on the ground that it was an entering wedge to break down traditions of the profession which holds inviolate the confidence between physician and patient. The Watertown Medical Society passed a resolution opposing any regulation which would bring that to pass, and while not formally presented, the council unanimously passed a resolution instructing the city clerk to procure a safe box in which records of liquor prescriptions shall be kept together, such box to have only two keys, one each for the city manager and the chief of police.

New York City

Gift to Presbyterian Hospital. — The Sloane family has given $190,000 to the Presbyterian Hospital in memory of William Sloane and his father, John. John Sloane was a member of the board of managers of the hospital, 1883-1905, and William was president of the board from 1916 until

his death in 1923. The Sloane gifts will go to the Presbyterian Hospital section of the medical center, but just what form the memorials will take has not been decided.

Academy of Medicine Election.—At the annual meeting of the New York Academy of Medicine, December 4, the following officers were elected: president for two years, Dr. Samuel A. Brown; vice president for three years, Dr. Frederick T. Van Beuren, Jr.; trustee for five years, Dr. George David Stewart; recording secretary for three years, Dr. Fenwick Beekman. Dr. Frank M. Huntoon read a paper on "Pneumococcus Antibody Solution Development"; Carl A. L. Benger spoke on "Oxygen Administration in Pneumonia," and Dr. Russell L. Cecil discussed the "Rationale of Specific Therapy in Lobar Pneumonia."

Society News.—Dr. Henry C. Courten was elected president of the Medical Society of Queens County, Dr. Denis E. McMahon, vice president, and Dr. Joseph S. Thomas, secretary-treasurer.——The Medical Society of the County of New York, at its annual meeting, New York Academy of Medicine, November 24, elected Dr. Samuel J. Kopetzky, president; Drs. William T. Healy and Henry S. Patterson, vice presidents; Dr. Daniel S. Dougherty, secretary; Dr. John M. Mabbott, assistant secretary; Dr. James Peterson, treasurer, and Dr. William Ten-Eyck Elmendorf, assistant treasurer. Sir Henry M. Gray, Montreal, addressed the society on "Surgery of the Colon."

NORTH CAROLINA

Health Officers' Institute.—The state board of health will conduct an institute for health officers of the state at Raleigh during the week beginning December 15. Dr. Watson S. Rankin, state health officer, will be in charge, assisted by Drs. Everett F. Long and H. A. Taylor, deputy state health officers. Dr. Kenneth F. Maxcy, U. S. Public Health Service, will give six lectures on the principles of investigating and controlling contagious and infectious diseases. The mornings will be devoted to field work in the public schools of Raleigh and Durham, lectures and demonstrations at the state laboratory.

OREGON

Dr. Parrish Goes to Los Angeles.—Dr. George Parrish, for seven years health officer of Portland, has been appointed city health commissioner of Los Angeles, it is reported, to succeed the late Dr. Luther Milton Powers. Dr. Parrish assumed his new duties, December 1.

PENNSYLVANIA

Hiccup Epidemic.—The state department of health has received reports from various parts of the state of prolonged attacks of hiccup. The so-called epidemic is reported to be spreading rapidly, having reached upper Darby Township.

Hygeia for Legislators.—The Northampton County Medical Society has made a gift of a subscription to *Hygeia* to each member of the state legislature and U. S. Congress from that county, and also to each of the public libraries in the county.

Society News.—Dr. William H. Guy, Pittsburgh, delivered a postgraduate lecture before the Allegheny County Medical Society at the Carnegie Library, December 4, on "Skin Diseases in General Practice and Their Treatment."——At a recent business meeting, the Allegheny County Medical Society fixed the dues assessment for 1925 at $15 for all members who have been licensed to practice five years or more, and at $10 for those who have been licensed less than five years.

Philadelphia

Smallpox in Frankford.—Extensive smallpox quarantines were established, December 3 and 4, in two sections of Frankford on the discovery of several cases of the disease. The quarantine affected the upper end of Frankford, where nearly 8,000 residents in the congested districts were examined by forty-six physicians, and the lower portions of Frankford where about 500 families reside.

Hospitals Agree on Appointments.—At a recent executive session of the Hospital Association of Philadelphia, a resolution was unanimously adopted by which all members agree to make no arrangements for the appointment of interns before February 1 of the appointee's senior year in medical college. Heretofore, hospitals have been advancing the date of examinations for prospective interns each year until some were conducting examinations in October in the student's senior year; some made arrangements with students in the latter part of their junior year. The result was that students were being examined before they were qualified, and hospitals were not able to properly judge their fitness. The agreement just made goes into effect at once, and fifty-eight of the leading medical institutions and hospitals in this city and vicinity will abide by it.

Society News.—Dr. William Einthoven, professor of physiology, University of Leyden, Holland, addressed the combined Rush Society and Physiological Society of Philadelphia, December 1, on "The Use of Fine Threads in Physiology," and on December 4 gave the Newbold lecture at the College of Physicians on "The Relationship of the Mechanical and Electrical Phenomena of Muscular Contractions, with Especial Reference to Cardiac Muscle."——The scientific meeting of the Philadelphia County Medical Society, December 10, was devoted to subjects related to both dentistry and medicine. Addresses were made by Dr. Charles R. Turner, dean of the dental school, University of Pennsylvania; Dr. Ralph Pemberton, Dr. Judson Daland and James R. Cameron, D.D.S.——At the recent annual meeting of the Philadelphia County Medical Society, November 19, Dr. Arthur C. Morgan was elected president; Dr. Moses Behrend, vice president; Dr. Edward A. Shumway, treasurer, and Dr. Henry G. Munson, secretary.

SOUTH CAROLINA

Chiropractor Jailed.—L. H. Deadwyler, Anderson, chiropractor, was sentenced, November 19, in general sessions court to sixty days in jail and a $60 fine for practicing medicine without a license, it is reported. The state's case was based on the supreme court's ruling in connection with the practice of chiropractic, and the testimony of members of the state board of medical examiners and of persons who had been treated by Deadwyler.

TENNESSEE

Hospital News.—An appropriation of $7,500 was recently made for an addition to the Davidson County Tuberculosis Hospital, Nashville.

Society News.—At the recent meeting of the Middle Tennessee Medical Society, Lewisburg, November 15, Dr. James C. Kelton, Lascassas, was elected president; Dr. John M. Lee, Nashville, vice president, and Dr. Sam P. Bailey, Nashville, secretary-treasurer.

UTAH

Greetings to Centenarian.—The secretary of the Uintah County Medical Society, Utah, reminds THE JOURNAL of the one hundredth birthday, December 2, of Dr. Harvey C. Hullinger, Vernal, Utah. Dr. Hullinger is still in practice.

VIRGINIA

Medical College Anniversary.—The Medical College of Virginia, Richmond, celebrated its eighty-seventh anniversary in the "Old Egyptian Building," December 1, with appropriate ceremonies This school has the distinction, it is reported, of being the only medical college in the south which maintained its courses without interruption during the period of the Civil War.

Death of Dean Hough.—Theodore Hough, Ph.D., dean of the University of Virginia Department of Medicine, Charlottesville, died suddenly, November 30, of heart disease. Dr. Hough received his Ph.D. at Johns Hopkins University, Baltimore, 1893, specializing in biology. He was instructor and assistant professor of biology at the Massachusetts Institute of Technology, 1893-1903, associate professor and professor of biology, Simmons College, Boston, 1903-1907, professor of physiology at the University of Virginia since 1907 and dean of the department of medicine since 1915. Dr. Hough was a member of various scientific societies, president of the Association of American Medical Colleges, 1922, and a co-author of "The Human Mechanism" and numerous papers on physiology and hygiene.

WASHINGTON

Telephone Directory to Be Cleared of Spurious Doctors.—The Pacific Telephone Company has promised that the next issue of its directory will be cleared of all those who, although not licensed as physicians and surgeons, have in the past been listed with naturopaths, sanipractors and other similar varieties. The Public Health League has consulted officials of the telephone company, and an effort will be made to get a uniform listing for physicians in every city of the state.

Attorney General Investigates Sanipractors.—The attorney general is conducting a legal campaign throughout the state against the American University of Sanipractic in Seattle. It is alleged that this "university" has issued diplomas to "healers" without requiring attendance at "lectures." Many depositions have been taken concerning the methods of diploma selling of John E. Lydon, president and general manager of the "university," and a former member of the drugless healer board of examiners. The indications are that the state will be able to sustain its charges, according to the *Bulletin* of the King County Medical Society, and if so, more than 100 licenses of drugless healers in the state will need to be revoked as a result of fraud.

GENERAL

Dr. Jordan Awarded Peace Prize.—Dr. David Starr Jordan, chancellor emeritus, Stanford University, California, has been awarded the $25,000 peace prize offered by Raphael Herman, Washington, D. C., for the best educational plan to maintain world peace, it was announced, December 7, by the World Federation of Education Associations.

Dr. Hamilton Appointed to League of Nations.—Dr. Thorvald Madsen, Copenhagen, Denmark, chairman of the health committee of the League of Nations, who recently visited this country, announced, November 22, it is reported, the election of Dr. Alice Hamilton, Medical School of Harvard University, Boston, to membership in the health committee of the League. The only other representative of the United States on this committee is Dr. Hugh S. Cumming, surgeon-general, U. S. Public Health Service.

Personal.—Dr. Thorvald Madsen, president of the health committee of the League of Nations and director of the State Serum Institute of Denmark, who has been the guest of the International Health Board during a six weeks' study of public health administration, sailed for France, November 26.——Dr. Charles A. Bailey, of the staff of the International Health Board, recently sailed for Spain to assist the government in a hookworm survey of the mines of that country. Dr. Bailey was for eight years in charge of the hookworm campaign which the government of Salvador has been conducting in cooperation with the International Health Board.

Warning.—Physicians in various parts of the Mississippi Valley report that a Miss Rita Calloway called at their offices representing herself as an agent for the Court of Honor Life Association. She then requested them to fill out a form for the position of medical examiner with this company, collecting a fee of $5 and leaving to return shortly with her applicants for examination. She did not return. The medical director of the Springfield Life Insurance Company writes that Rita Calloway was once an agent for the Court of Honor Life Association, which organization was recently changed to an old line company and now is called the Springfield Life Insurance Company. This organization discharged her without being able to secure the blank forms which she had.

Plague Infected Rodents Found.—Recent reports on plague infection in Los Angeles received at the U. S. Public Health Service in Washington have given cause for grave concern on the part of government officials. Recent telegraphic reports show that several new plague-infected rodents have been found in Los Angeles in a district far removed from the plague-infected area. The Public Health Service, with its long experience in plague sanitation, regards these new discoveries as ground for apprehension that further outbreaks of pneumonic plague may occur. Several foreign countries have placed quarantine restrictions on ships from Los Angeles and vicinity. Surgeon General Cumming has arranged for three of the best plague fighters in the Public Health Service—Dr. James C. Perry, Dr. Richard H. Creel and Dr. Newton E. Wayson—to remain at Los Angeles to inaugurate such measures as may be necessary.

Society News.—At the annual meeting of the Central States Pediatric Society, Rochester-Minneapolis, October 30-31, Dr. Joseph Brennemann, Chicago, was elected president; Dr. Edward C. Mitchell, Memphis, Tenn., vice president, and Dr. Henry T. Price, Pittsburgh, secretary-treasurer.——Dr. Stewart Roberts, Atlanta, Ga., was elected president of the Southern Medical Association, New Orleans, November 27; Dr. Robert H. McGinnis, Jacksonville, Fla., and Dr. Homer J. Dupuy, Jr., New Orleans, La., vice presidents. The next annual meeting of the association will be in Dallas, Texas.——At the recent New Orleans meeting, Dr. Edward T. Newell, Chattanooga, Tenn., was elected president of the Southern Association of Railway Surgeons, and Dr. Jarrett W. Palmer, Ailey, Ga., secretary-treasurer.——At the annual meeting of the Western Surgical Association, French Lick Springs, Ind., December 4-6, Dr. Willard D. Haines, Cincinnati, was elected president; Drs. Thomas G. Orr, Kansas City, Mo., and Reginald H. Jackson, Madison, Wis., vice presidents, and Dr. Harry P. Ritchie, St. Paul, secretary-treasurer. The next meeting will be in Wichita, Kan., December, 1925, the day to be selected by the committee of arrangements and the secretary.

National Committee for Mental Hygiene.—At the annual meeting of this committee, New York, November 15, Dr. William H. Welch, Baltimore, emphasized the importance of looking to the grade schools, high schools and colleges for the beginning of mental problems that culminate in mental disease, crime and dependence in later life. Funds appropriated by the Rockefeller Foundation and the Commonwealth Fund will be used in awarding scholarships to selected physicians and social workers who must receive special training in mental hygiene. Dr. Frankwood E. Williams, the medical director, stated that in the last year these funds made possible a survey of the hospitals for the insane, the penal and correctional institutions and rural schools of Texas; a survey of the mental hygiene needs of the schools and courts of Staten Island and the work of child guidance clinics in Los Angeles, Minneapolis, St. Paul, Memphis and Macon. The following officers were elected: Dr. William H. Welch, Baltimore, honorary president; Dr. Charles P. Emerson, Indianapolis, president; Drs. Charles W. Eliot, Cambridge, and Bernard Sachs, New York, vice presidents; Frederic W. Allen, New York, treasurer, and Clifford W. Beers, New York, secretary.

Survey of Ripe Olive Situation.—The three outbreaks of botulism due to canned ripe olives reported to the Bureau of Chemistry, Department of Agriculture, early in 1924, revived the suspicion aroused by the outbreaks in 1919 and 1920. A survey of the ripe olive situation by the Bureau of Chemistry was therefore necessary, and accordingly was made during the summer. The Microbiological Laboratory received and examined over 800 official samples, totaling over 2,900 containers of ripe olives, from thirty states, the District of Columbia and Porto Rico, representing about twenty different packers. The samples were not reported as representative of the ripe olives on hand, but as spoiled or suspected material found on the shelves of dealers. Bacteriologic examination of these samples showed that canned ripe olives which were free from swell, from abnormal odor, or other marks of spoilage were not dangerous. *B. botulinus* was not found in any sample. The investigation furnished no ground for attributing special danger to the consumption of canned ripe olives, if reasonable care is exercised to exclude spoiled products from sale or use. But the finding of considerable quantities of spoiled material scattered widely throughout the country and representing many producers necessitates the exercise of great caution in the avoidance of unfit material.

American Association for the Advancement of Science.—The annual meeting of this association, to be held in Washington, D. C., December 29-January 3, will be the fifth meeting of the association in that city. The preliminary announcement of the meeting shows that the association's work is divided into fifteen sections, Section N being the medical sciences. This association is the only organization in this country that deals with the entire field of science. Some scientific organizations are well known to the public, but there will be meetings of societies at the general meeting of the American Association for the Advancement of Science which, while important societies, are not widely advertised; for example, the Society of American Foresters will meet December 30-31, the Potato Association of America, December 29-31, and the American Society for Horticultural Science, December 29-31. The permanent office of the association is in the Smithsonian Institution. The registration room will be at the Willard Hotel. Section N will have a joint meeting, Monday morning, December 29, with the Federation of American Societies of Experimental Biologists, and in the afternoon discussions by Dr. Richard P. Strong, Boston, retiring vice president of the section, on "The Relation of Certain Free Living Micro-Organisms to Disease"; by Dr. George Draper, Columbia University College of Physicians and Surgeons, New York, on "The Relation of the Human Constitution to Disease"; by Dr. Alfred F. Hess, University and Bellevue Hospital College, New York, on "Recent Advances in the Biologic Effects of the Ultraviolet Rays," and by William W. Cort, Ph.D., Johns Hopkins University, on "Hookworm Disease in China, and Related Problems."

FOREIGN

International Eugenics Library.—The International Eugenics Association has been considering the publication of the best works bearing on eugenics produced each year in different countries. The Italian Instituto di igiene, previdenza and asistenza sociale, founded by Prof. E. Levi, has offered to publish at least one volume a year. Leonard Darwin visited Rome recently for the purpose of completing the arrangements. The works are to be published preferably in French or English.

Centennial of Charcot.—The official notice has been received of the ceremonies to be held at Paris early in June, 1925, at the Académie de médecine, the Faculté de médecine and the Société de neurologie to honor the centennial of the birth of Charcot. Foreign governments and scientific societies have been invited to send delegates. The Société de neurologie will celebrate at the same time its sixth international reunion. The committee in charge is headed by Babinski, with P. Marie, Pitres and P. Richer as honorary presidents, and includes Jean Charcot and a number of Charcot's old pupils, with Dr. A. Souques, 17, rue de l'Université, Paris, secretary.

British Institute of Radiology.—A committee, formed in 1923 under the chairmanship of Sir Archibald D. Reid, and comprising representatives from the Royal Society of Medicine, the Röntgen Society and the British Association for the Advancement of Radiology and Physiotherapy, to organize a central institute of radiology, has leased property at 32 Welbeck Street, London, to house the institute. This property includes the old church of the Russian embassy, now adapted as a lecture hall, a lecture room equipped with desks for the Mackenzie Davidson memorial reference library, a room fitted with apparatus for demonstrations, other rooms available for individual research, and a handsomely decorated room available for meetings of affiliated societies. In memory of Sir Archibald D. Reid, a reference collection of roentgenograms is being established, and duplicate sets will be prepared for the use of medical schools or lecturers, and lantern slides of these roentgenograms will be available for loan. It is proposed to hold an International Congress of Radiology at the institute in 1925, with the hope that an international committee will be formed as a permanent nucleus for cooperation in radiology and kindred subjects.

Government Services

Reorganization of Government Departments

President Coolidge, in his message to Congress, urges the passage of the bill to reorganize and transfer various bureaus of the government which has been pending for a number of years. Public health and medical activities of the government are important features of this legislation. The reasons for such reorganization are well known. The President's message states:

> One way to save public money would be to pass the pending bill for the reorganization of the various departments. This project has been pending for some time, and has had the most careful consideration of experts and the thorough study of a special congressional committee. This legislation is vital as a companion piece to the budget law. Legal authority for a thorough reorganization of the federal structure with some latitude of action to the executive in the rearrangement of secondary functions would make for continuing economy in the shift of government activities which must follow every change in a developing country. Beyond this many of the independent agencies of the government must be placed under responsible cabinet officials, if we are to have safeguards of efficiency, economy, and probity.

Report of St. Elizabeth's Hospital

The daily average patient population of St. Elizabeth's Hospital, Washington, D. C., for the fiscal year, ending June 30, was 4,114, an increase of 132 over the previous year. The total number of deaths was 223, a decrease of fifty-nine. The annual report, recently submitted to the Secretary of the Interior, gives the number of employees on the hospital pay roll at the end of the year as 1,258. The farm and garden products raised by the hospital were worth more than $160,000. The new laboratory building has been completed. It is now possible to develop both the clinical and the research features, both lines of activity having practically come to a standstill as a result of physical limitations of previous laboratory facilities. The new isolation building has been completed with facilities for fifty patients suffering from different diseases, each class being isolated. The superintendent states that the hospital has practically reached the limit in the number of patients it can house and give proper treatment. The hospital needs a "hospital building" with a capacity of 165 beds, the cost of which is estimated at $550,000.

Report of Commissioner of Indian Affairs

Indians have more trachoma and tuberculosis, says the Commissioner of Indian Affairs in his report to the Secretary of the Interior, but less diphtheria, scarlet fever, toxic goiter, cancer, typhoid fever and cardiovascular disease than other people. Early in the last fiscal year physicians in the Indian service were urged to take aggressive measures against trachoma, and trachoma surveys were made in Minnesota, Wisconsin, California, Arizona and New Mexico. The result was the southwestern trachoma campaign, probably the most extensive health effort ever undertaken by the Indian Medical Service. The Indian Appropriation Act gave an extra allowance of $130,000 for health work during the fiscal year. The year was characterized by epidemics, the most serious being diphtheria in the Northern Pueblo jurisdiction, scarlet fever at Jacarilla and Lac du Flambeau, and smallpox at Fort Belknap, Nea Bay and Camp Verde. No direct fatalities occurred. Arrangements are in progress, or have been completed, for a new Indian Sanatorium at Onigum, Minn., a new hospital at the Oklahoma Chilocco School, and one at Shawnee, Okla. The needs of the Indians, presented in last year's report, for sanatoriums, schools, hospitals for incurable patients, and an institution for crippled children, are still partially unsatisfied. With the increase in hospital facilities already planned, the situation with reference to general hospital and sanatorium treatment will be considerably improved, but that for crippled children will not be improved.

Report of Surgeon General of the Navy

During the fiscal year 1924, seventy-eight medical officers were appointed in the navy and fifty-two were lost to the medical corps, thirty-one by resignation, thirteen by retirement, seven by death and one by dismissal. In his annual report, the Surgeon General says that the navy medical school has completed the twenty-second year of its existence, graduating in the last year two classes, totaling twenty-seven medical graduates and ten dental graduates. The report covers health statistics for the calendar year 1923. The death rate in the navy was 4.05 deaths per thousand personnel, a little higher than the lowest rate ever recorded, 3.23 in 1922. The Surgeon General states that the increase this year is due almost entirely to a 21 per cent. increase in the rate for drowning and to the fact that there were twenty-four deaths caused by measles, as compared with but one in 1922. The excessive loss by drowning came about with the wreck of seven destroyers at Point Honda, Calif., Sept. 8, 1923. Apart from this, the death rate from drowning was lower than in the preceding year. There was also an increase in the general morbidity rate, 608 per thousand personnel, but even that is considerably lower than the medium rate for the preceding five years, 668. The morbidity rate for 1922 was 605 per thousand. Of 8,922 naval officers who were given the annual physical examination, 12.6 per cent. were found to have some physical defect of sufficient importance to be mentioned in their reports. Overweight stood first, being found in 2.8 per cent. of the officers, followed by arterial hypertension in 1.9 per cent., defective vision in 1.6 per cent., and underweight in 0.6 per cent. There were 70,834 admissions to the sick list for all causes, and the admission rate for sickness and injuries was 607.68 per thousand. The average number of service days lost on account of admissions to sick report averaged 12.7 days per person in the service; this average in 1922 was 11.4. The daily average number on the sick list of the navy was 4,044. Diseases of the respiratory system, as usual, head the list among the causes of morbidity, comprising more than 20 per cent. of the total admissions. Second on the list is venereal disease. Of the total number of deaths (472) in 1923, only 215 were caused by disease, making the disease death rate 1.84 per thousand. This is very low, but it is 11 per cent. greater than the disease death rate in 1922, which was 1.65 per thousand. There were thirty-five deaths from suicide, a rate of 30 per hundred thousand.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 29, 1924.

Vital Statistics: Lowest Death Rate Recorded

The registrar-general's returns for the last quarter broke all previous records. The wet and ungenial summer of 1924 proved singularly favorable to the health of our population. The births recorded in England and Wales totaled 186,648. Compared with the third quarter of 1923, there was a drop of 3,500, and the rate, 19.3 per thousand of population, was the lowest ever recorded in any third quarter of the year, excepting the war years 1917, 1918 and 1919. The deaths numbered 90,155, giving a rate of 9.3, the lowest ever recorded in any quarter in this country since civil registration was established in 1837. As usual, notwithstanding the excess of females in our population, the deaths of males outnumbered those of females, there being 46,705 of the former to 43,450 of the latter, a proportion of 1,075 to 1,000. If the disparity in the numbers of males and females in the population is taken into account, 118 males died to every 100 females. This excess of male mortality is a feature of English vital statistics. Infant mortality fell to the record rate of 53 per thousand births, the lowest rate ever recorded in any quarter, being no less than 25 below the average of the ten preceding third quarters. Going back twenty-one years, to 1903, which was a record year up to that date, the infant mortality rate for the September quarter of that year was 131. In London 22,024 births were registered, 1,031 fewer than in the same quarter of 1923. The birth rate, 19.3, was identical with that for the country as a whole, but 1.1 below that of London in the corresponding quarter of 1923. London deaths totaled 9,837, being 800 fewer than in the corresponding quarter of last year, while the rate 8.6 was 0.7 below that for the country as a whole. Most remarkable perhaps of all, London's rate of infant mortality last quarter was down to 48 per thousand births, 5 below the record rate for the country as a whole, and 9 below the rate for the 105 large cities combined. Twenty-one years ago the London rate of infant mortality stood at 141 in the September quarter, 8 above the England and Wales rate, and nearly three times what it is this year. It was a favorite theory with many writers on vital statistics that "urbanization" was noxious to infant life. In the light of these figures they must abandon that theory, and look to the type of urbanization rather than to urbanization per se.

The Extermination of Pests

Speaking last night at the dinner of the newly incorporated College of Pestology, Sir James Crichton-Browne said that the mosquito was a perpetual menace to mankind wherever it existed. In spite of all the precautions taken, two ships had recently arrived in British ports heavily stricken by malaria and affording an ample supply of seed for British mosquitoes to distribute, should they get at it. It was therefore reassuring to learn that the college had just appointed a committee to consider what steps should be taken for the banishment of mosquitoes from Great Britain, and that a gold medal was to be given for the best essay on the subject. In response to a suggestion by Dr. Andrew Balfour of the London School of Hygiene, a panel of applied zoology had been formed and would collect for it, and probably for other colleges, specimens of pests from all parts of the ocuntry, and would institute research in various directions. Mr. Alfred E. Moore, director of the college, insisted that it was a matter of national urgency that the tree climbing rat—the gray squirrel—should be exterminated, as it was doing immense harm in fruit-growing districts and eliminating the beautiful native red squirrel. Steps were being taken for the reduction in numbers of the sparrow, which during the war time had been described as a "feathered U-boat" and which did serious damage to crops. The suggestion was made that the sparrow, which at present often masqueraded as other birds in the menus of restaurants, should be introduced as an ordinary article of diet.

Major Darwin's Warning Against "Family Allowances"

Major Leonard Darwin, son of Charles Darwin and president of the Eugenics Education Society, delivered an address on family allowances at the Forum Club. He said that they were dealing with methods by which eight million workmen were now being paid in Europe. The occupational system was likely to be the first to be introduced into this country, and under it employers would be compelled to divert a certain portion of the money now paid in wages to a pool from which payment would be made to the wives of employees in proportion to the number of their children. To maintain our present population, married couples should have at least two offspring. The cream of our professional classes formed a group that was absolutely dying out, and, while there might be some consolation in the statement that those classes were being recruited from below, the situation was dangerous. If the blood of the professional classes was being replenished only from without, it would flow away to waste. The stock was magnificent; but if things went on as they were doing, that stock was destined to play no part whatever in the future of the nation. Under the family allowance system, young couples would know that with the appearance of each additional child there would be a known increase of their income. This would lead to the production of more children, and the system must be applied to the better-paid class as well as to the poorer strata of society, if it was to produce the best results. Family allowance systems, if introduced, under the pressure of humanitarian influences, would, if uncontrolled by scientific study, tend to hasten the downfall of our civilization, which even now was exposed to considerable danger. The state should keep a hand on the tiller of maternity, and efforts should be made to increase the production of the higher types and to limit those of the lower. At the same time, it should do its best to alleviate suffering among the lower classes.

Medicine in the New Parliament

There are a dozen physicians in the new parliament, of whom seven are conservative, four labor and one independent. The liberal party, which suffered so badly in the election, is not represented by a single physician. Of the physicians returned, three are members for universities—London, Belfast and the combined Scottish. Of the remaining nine, three may be said to have embraced a political career, and three more are not in general practice. This leaves only three general practitioners.

"Patent Medicine" Publicity

Members of the Publicity Club of London discussed the advertising of "patent medicines," and after a lengthy debate, in which representatives of the medical profession and of the "patent medicine" manufacturers took part, a resolution was carried unanimously urging the government to afford facilities for the passage of a bill for the regulation of this class of advertisement. The subject was opened by Mr. Gilbert Russell, who declared that many of the things claimed for some "patent medicines" could not possibly be true. He objected to the press being abused, as they too often were, for every time a lie was told about a "patent medicine," harm was done to the man who had an honest article to sell. Dr. Cox, medical secretary of the British Medical Association,

drew a distinction between reputable, decently advertised remedies and those which made exaggerated claims. He objected to most "patent medicine" advertising, because it ran counter to public interest. Long-distance diagnosis and treatment was always bad, and reliance on "patent medicines" postponed the application of proper treatment, sometimes with very bad results. Silly, deluded people who were gulled by some of the advertisements might easily risk a life by losing time over a remedy making exaggerated claims. There were, of course, some "patent medicines" whose claims were not ridiculous, which most of them had taken with a clear conscience, and sometimes with benefit to health; but it was a different thing when they found preparations claiming to cure cancer. This sort of claim was a reflection on the mental state of the people who wrote them, the people who sold them, the people who published them, and the people who were gulled by them. The attitude of the manufacturers was explained by Mr. Kenningham, secretary of the Association of Manufacturers of British Proprietaries, who said that the members would welcome a patent medicine bill on the lines of that introduced into the House of Lords four years ago, but manufacturers would in no circumstances give away their formulas to any government department. He did not agree with any one who said "patent medicines" did not do any good; they could not exist in that case. The revenue from "patent medicine" stamps was $5,625,000 a year, which meant that something like 500,000,000 packets of "patent medicine" were sold in England, Scotland and Wales. Mr. Horace Imber, contributing an advertisement manager's view, said he had always made it a rule to refuse any advertisement which claimed to cure a disease for which medical science had failed to find a remedy. He did not think the word "cure" should be used in honest advertising. He had had fifty or sixty preparations analyzed, and not more than two had been disqualified as useless for the ailment for which they were advertised. Sir William Veno, as a manufacturer, was in perfect agreement with practically all that Dr. Cox had said. The "patent medicine" business attracted an undesirable class, and the reputable manufacturer suffered in consequence. He wanted the fraudulent class of medicine out of the business altogether, and the way to do it was to bring in legislation and to set up a committee of physicians and chemists with power to visit laboratories and study the business on the spot. If a business was legitimate, it should be registered; if not, it should be put out altogether.

PARIS

(From a Special Correspondent)

Nov. 22, 1924.

Death of Dr. Léon Cheinisse

Dr. Léon Cheinisse, for many years the Paris correspondent of THE JOURNAL, was killed in an automobile accident, the middle of November. While walking on one of the side streets, he was struck by a taxi which had turned suddenly to avoid striking a bicyclist, the chauffeur stepping on the accelerator pedal instead of on the brake.

Dr. Cheinisse was born at Lupecana, Russia, Feb. 8, 1871. He studied medicine at the University of Montpellier, and became extern in 1891, and hospital intern in 1892. He spent four years in this service and served as secretary to the Société de médecine et de chirurgie of Montpellier. He was graduated as doctor of medicine in 1896. In 1897, on completing his studies, he was awarded the Buisson prize, which is given to students who have distinguished themselves by their scholarship and their services in the hospitals.

He became secretary on the editorial staff of the *Semaine médicale* (1898-1900), and became an editor in 1900. In this journal, besides abstracts and therapeutic notes, he published sixty-two original articles. When, with the advent of the war, the *Semaine médicale* was discontinued, he became an editor on the *Presse médicale*, and was given charge of the therapeutic department. Each year, for the last five years, he published among the Masson books L'Année Therapeutique, a collection intended to keep the physician abreast of new methods in the art of healing. Having carried out excellent clinical studies and continuing to do so, he was able to discern what might be useful to the practitioner, and his book had an extensive sale.

He was also a collaborator on several foreign journals. Before the war, he wrote for the Russian medical journals. In addition to THE JOURNAL, he was correspondent of the *Archivos de Medicina, Cirugia y Especialidades*. He had recently published in Spain a monograph on Les médicaments cardiaques.

Dr. Cheinisse did not confine himself, however, to his medical studies. He had devoted himself also to the study of law, and his doctor's thesis on the political and economic sciences, "Les idées politiques des physiocrates," which he presented in 1914, at the University of Paris, was much commented on.

He was professor at the Russian school of Hautes Etudes Sociales while this school existed, and acquired justly deserved fame in the important Russian journals of law, in which he published articles on questions of sociology and criminology.

Dr. Cheinisse took part in the war of 1914-1918, as a volunteer, devoting himself untiringly to the service of the country of his adoption.

Reorganization of Medical Studies

The *Journal officiel* has published a decree reorganizing the courses of medical instruction. This decree is the outgrowth of the deliberations of the medical faculties and of the medical commission of the consultative committee on higher education. At the beginning of the deliberations, the question of the preparatory year, the so-called P. C. N., was taken up. Under the present system, future students of medicine must spend a preparatory year at the Faculté des sciences, studying physics, chemistry and the natural sciences; hence the common abbreviation P. C. N. The medical faculties have never ceased to regret the fact that these scientific studies were pursued outside their control, for the reason that the courses in science were not well adapted for students about to specialize in medicine and prolonged without great profit the long-drawn-out training of future physicians. But for reasons of a general and a financial nature, it has not been heretofore possible to modify conditions. The reorganization provided for in the decree concerns simply the division of the various subjects among the five years of study. A preliminary course of morphologic and biologic studies covering a period of two years is provided, the first year being reserved for anatomy, embryology and histology; the second year for physiology, medical physics and medical chemistry, which constitute a perfectly logical combination for which the development of science compels us to reserve henceforth a more and more important place. Regrets have been expressed by the advocates of a more comprehensive course in anatomy extending over the first two years. But the proponents of the new system were of the opinion that, in medical instruction, a course in physiology should follow the course in anatomy. However, in order to quiet the objectors, supplementary instruction and practice in surgical anatomy and operative medicine have been provided for the fourth year. Bacteriology has likewise been placed in this preliminary course, in the second year, on the ground that it should be studied at an early point in the course and with a view to uniting the sciences taught in the second year.

An endeavor was manifest to avoid as much as possible in the third year the crowding and the accumulation of subjects which has existed for many years. Relieved of bacteriology, operative medicine and pathologic chemistry (which will likely be put with the medical chemistry of the second year), the practical drills in experimental medicine, and with an instruction in parasitology confined to the teaching of the general conceptions and the essential ideas, the third year will thus allow a more concentrated and a more effective study of the remaining subjects, and, more particularly, medical and surgical pathology and pathologic anatomy. On the other hand, it has seemed feasible to add to the regular program of the fourth year, which was much more restricted. Besides surgical and medical pathology, the fourth year will cover general pathology and practical drills in medicosurgical anatomy and operative medicine. As for the medical specialties, these have been reduced to six: ophthalmology, otorhinolaryngology, cutaneous and syphilitic diseases, contagious diseases, psychiatry and the pathology of children. Finally, in the fifth year, deontology will be combined with legal medicine. Pharmacology and therapeutics, together with hydrology as a subordinate subject, will constitute a course. Stomatology will not be covered by a special examination.

As for the examinations, certain faculties had demanded the privilege of giving written tests in certain subjects. It was decided that it would be difficult to grant any such privileges, as it would be making an unequal differentiation between the various tests and the several faculties. Examinations will henceforth be graded in figures from 0 to 10. If a candidate does not succeed in securing a grade of at least 5, he will be obliged to repeat the subject at the following session. The questions asked the candidates may be taken from any part of the program of instruction irrespective of whether or not they were ever discussed by the professor in the course of the class room instruction. Regulations governing clinical examinations have been considerably modified. The clinical tests must include a day spent in the services of at least two of the members of the examining board, and will comprise the examination of a patient, the writing out of observations pertaining to the patient, and, finally, a recapitulative examination at the Faculté de médecine, based on the case history taken at the clinic, and including any additional questions that any member of the board may see fit to ask in his service or the examining board may desire to put to the candidate during the recapitulative examination.

The regulations with respect to the candidate's final graduation thesis have been made more precise. A candidate must announce the subject of his thesis at least two months before its presentation, and must secure the approval of the chairman of the committee appointed in connection with the candidate's sustaining of his thesis. The jury of acceptance will be composed of four members in place of three. It has been decided, in spite of many adverse opinions, that it is desirable to distinguish by special mention the best theses. Every candidate sustaining a thesis successfully will therefore be accepted "without spetial mention," "with honorable mention" or "with very honorable mention," as the case may be.

Memorial to Nurses

The monument erected at Reims to the memory of the nurses of the French and allied forces who made the supreme sacrifice was recently dedicated in the presence of Mme. Juliette Adam, chairman of the committee; Cardinal Luçon, archbishop of Reims; General Pau, president of the Red Cross Society; Mrs. Laurence Bennett, representing the American nurses, and the sculptor Denys Puech and the architect Girault, who are the creators of the monument.

VIENNA

(From Our Regular Correspondent)

Nov. 17, 1924.

Statistical Data on Cocainism and Morphinism in Austria

In connection with the arrest of a band of smugglers, the police have secured a list of surreptitious dealers in cocain and morphin. A raid on their stores of drugs netted some surprising results. It was ascertained that a single dealer had disposed of 73 kg. of cocain hydrochlorid in a single year. Another dealer had sold and transported 501 kg. of morphin to Hungary, a quantity sufficient to anesthetize the whole population of Central Europe. Although the normal consumption of cocain in the republic of Austria does not exceed 60 kg. yearly (normal use is for medical purposes only), it was established that the licensed sellers of narcotics (apothecaries, wholesale houses and drug dealers) had received 210 kg. of cocain. It would appear, therefore, that 150 kg. of the drug had either been "snuffed" in Austria or exported to foreign countries. The police of Vienna have the names of 200 notorious cocain addicts of both sexes, and 150 dealers have been fined for illegal sales. These figures, however, represent only a portion of those addicted to the drug. The number of morphin users is not exactly known, for the reason that this habit does not ordinarily bring its victims in conflict with the police. However, a private inquiry among physicians showed that more than 1,200 morphin addicts are known. Public attention has been directed, this year, especially to the cocain menace, owing to the fact that not less than five fatal poisonings following cocain "snuffing" have become known, while others have doubtless been suppressed. The harvest of crime that follows in the wake of cocainism is also a heavy burden on public welfare.

A Number of Fatalities Following Subcutaneous and Intravenous Injections

During the last few weeks, several accidents have happened here that have been due to errors in medical injections. In a children's hospital in Baden, near Vienna, seven children died following injections of a toxin-antitoxin mixture as prophylactic of diphtheria. It appeared that gross negligence on the part of the pharmaceutical house that had furnished the vials ready for injection was the cause. The preparation was not fresh, and it is a well known fact that, in the case of the toxin-antitoxin mixture, which has world-wide use for prophylactic purposes, the antitoxin loses its efficacy sooner than the toxin, so that, when the mixture is old, only the toxins exert an effect. The hospital physicians had followed exactly the instructions issued by the manufacturers of the product, but these new instructions were misleading, and those who were guilty of the error will be brought before the courts. Soon afterward, a man died after an injection of a remedy for bronchial asthma, and a few days later a woman who was to have been given, it was said, an injection of potassium iodid but who had received in reality a large dose of mercury, as was shown at the necropsy.

Proposals for the Reform of Medical Instruction and Examinations

For a number of years, medical students have protested—though seemingly without avail—against a number of bad features in connection with clinical instruction and the methods of conducting examinations. But recently the students and the assistant physicians of the hospitals have joined forces in the hope of abolishing at least the worst evils. They desire especially to bring it about that students shall receive better training in practical, purely technical subjects, and that the instruction be given by special physicians

selected for the purpose. For example, it has been the custom for some time for the students, before presenting themselves for the test in minor surgery, to take a course in bandaging under the famulus of the clinic, as they had no other means of learning it; yet they were examined in the theory and art of bandaging. The art of percussion and auscultation necessarily remains *terra incognita* to the students who have no money to pay for special courses. The same is true of histologic and chemical methods of research. Instruction in this field has been so defective that almost every one who presented himself for examination in these subjects learned through bribing the famulus exactly what preparations or substances would be given him at the examination. In order to put an end to such scandalous practices, a method is being introduced according to which every single physician of a clinic or of a medical department or institute entitled to give instruction is assigned a number of students, whom he must (without payment of fees on their part) tutor in the fundamental principles and methods of the technic of examination and treatment. In the future, the assistant physicians must actually assist their department heads in giving practical instruction—not so much to the physicians as to the undergraduate students. Since in Austria the young physician who has obtained his doctor's degree in medicine is immediately entitled to practice his profession, he must be sufficiently trained by the state to exercise his rights. In connection with this problem, the question of whole-time appointments, that is, of clinical teachers who have no private practice, is also to be regulated.

Results of Brain Surgery at the Vienna Clinic

In an address before the Gesellschaft der Aerzte of Vienna, Professor Eiselsberg has reported the results in 410 cases of surgical intervention on the brain, which had been carried out in recent years at his clinic—partly by Eiselsberg in person and partly by his assistants. The mortality is very high, since 40 per cent. died following the operation. However, 20 per cent. of those operated on—omitting the tumors of the hypophysis—were relieved of their symptoms either permanently or for a long period, even though the actual tumor was not found. In 50 per cent. of the cases in which no tumor could be found at operation, tumors were nevertheless discovered at a later necropsy. In 4 per cent. of the operations in which no tumor was found, exacerbation of the symptoms occurred. Headache, dizziness and vomiting are a combination of symptoms that may justly awaken the suspicion of a brain tumor, especially in the 45-55 age group. Roentgen rays and ventriculography (filling of the ventricle with oxygen and making of a roentgenogram) are valuable aids in the diagnosis and localization of brain tumors. This method was employed in sixty-nine cases. It is dangerous, however, and resulted in 10 per cent. mortality, while 40 per cent. of errors are still possible. The cooperation of neurologists and surgeons is absolutely necessary. In operations for cysts, it is necessary to remove carefully the portion of the tumor on the site of the cysts; otherwise a recurrence is very probable. The shock effect of the operation is very dangerous, causing 50 per cent. of the deaths. It is likely that paralysis of the vagus nerve is involved. The shock may be combated by resection of the arches of the atlas at the beginning of the operation; by allowing the patient to assume the ventral position (Cushing); by puncture of the ventricle; by careful observation of the pulse and blood pressure, and by the use of camphor preparations. Anesthesia is accomplished by using first procain, and then ether. Blood transfusion is often useful in combating shock and loss of blood, since 4 per cent. succumb from loss of blood. Postoperative pneumonia was the cause of 11 per cent. of the deaths, while infection, which is favored by the two-stage operative method, was responsible for 20 per cent. All nonoperable cases, including those in which a radical operation is not performed, are treated with roentgen rays, and the results are very promising. Also hydrocephalus and cephalalgia frequently react well to irradiation. To sum up, it may be said that, in the present status of our knowledge, from 20 to 33 per cent. of all patients can be saved. If the diagnosis can be made in the early stages, the mortality rate can certainly be lowered. At the close of his address, Eiselsberg introduced twenty patients, all of whom had been cured through operations on the brain, fourteen years having elapsed in one case since the operation.

HOLLAND

(From Our Regular Correspondent)

Nov. 10, 1924.

Accidents Caused by Vehicles

Although several attempts had been made to secure a combined study on accidents caused by vehicles, and the league of Het oranje Kruis had already mapped out a plan for an inquiry to be made throughout the kingdom, the minister of the interior did not grant the collaboration of his bureaus, and the enterprise was not carried out. Dr. Mijnlieff, therefore, took up the subject in person and addressed the administrations of the large cities. He was able to secure accurate data for Amsterdam, Rotterdam and The Hague for the year 1923:

Accidents Caused by Vehicles

City	No. of Accidents	No. per Thousand of Population
Amsterdam	3,451	4.95
Rotterdam	2,220	4.10
The Hague	1,360	3.70

He endeavored also to discover the cause of the accidents and secured the following figures: Bicyclists were responsible for from 25 to 30 per cent. of the cases, while automobilists were at fault in 36.9 per cent. of the cases in Amsterdam, 41.2 per cent. in Rotterdam and 41.6 per cent. in The Hague. These figures are regarded by the author as fairly representative of the whole country, where there are 30,000 automobiles and 1,500,000 bicycles in use. A comparison of the figures for the first six months of 1923 with the figures for the corresponding months of 1924 shows a considerable increase in the number of accidents and especially of automobile accidents. The figures for Amsterdam for the first six months of 1923 are: 266 accidents caused by passenger automobiles and 194 accidents caused by autotrucks. For 1924 the figures are, respectively, 509 and 309. This marked increase in the number of accidents will certainly come up for discussion in connection with the consideration in the lower house of the law pertaining to vehicles.

Legislation with Respect to Mental Patients

As far back as 1911, a bill was filed in the lower house looking toward the regulation of the situation of mental patients, not only from the penal but also from the social standpoint. On several occasions since that date, the public has become aroused over the lack of interest shown by the legislators in the proposed law. In a recent trial before the tribunal at Arnhem, the question of the guilt of a person charged with a double murder was raised. A hasty medicolegal investigation led to the conclusion that, if the defendant was in any wise responsible for the crime, his culpability was at least much reduced by his mental state. In spite of this opinion, the public minister demanded that the defendant be given a life sentence, arguing that the internment of the accused in a sanatorium would be only temporary. At the

end of a few years, he would be released and would again become a public menace. The court accepted this view and sentenced the accused in spite of the opinion of the medico-legal expert. The public is aroused over the matter and demands the consideration of the proposed law of 1911.

Leprosy

Although no exact figures in regard to the incidence of leprosy can be given, cases seem to be more numerous than is commonly believed. The report published recently by the Nederlandsche Vereeniging ter Bestrijding der Lepra and covering the years 1921, 1922 and 1923 demands the reopening of the leprosarium, which has been closed for lack of funds. This association has issued a pressing appeal and is straining its moral and financial strength to secure the needed funds with which to reopen and reequip the leprosarium. Inquiries have shown that the therapeutic use of chaulmoogra oil has proved effective, and it hopes to be able to apply this treatment soon.

Surgery in Pulmonary Tuberculosis

At the convention of the tuberculosis specialists of the Netherlands, Dr. Sauerbruch of Munich discussed the question of the surgical treatment of pulmonary tuberculosis. He called especial attention to the method of extrapleural thoracoplasty, which consists in the resection, along the spinal column, of the first to the eleventh ribs, to an extent varying from 4 to 8 cm., so as to reduce the capacity of the thorax. He outlined the results that he had secured by this method. Of 700 cases in which he operated, there was 4 per cent. of operative deaths; 20 per cent. of the patients died from cardiac or pulmonary complications, from a recurrence or a dissemination of the tuberculous infection, during the two years following the operation. In 10 per cent. of the cases, the operation brought no modification. In 39 per cent. a complete cure was effected, and in a further 27 per cent. a marked improvement was wrought. Estimating the total population of Holland at 7,000,000 and counting one in seventy as tuberculous, the total number of tuberculous persons in Holland may be placed at around 100,000. Ten per cent. of these patients present unilateral lesions. Sauerbruch holds that in about half of these cases thoracoplasty would be indicated.

Unification of the Governmental Medical Services

The minister of labor, commerce and industry has appointed a commission of inquiry charged with the task of bringing about a unification of the governmental medical services. The commission was instructed to take up the question of the control of health insurance societies, and, in accomplishing this task, it was intimated it might possibly be aided by the army medical service. Dr. Sikkel is chairman of the commission, which is composed of the chief members of the medical and social services of the various ministries. At the time this commission was appointed, Minister Aalberse emphasized that the great increase in the number of the various medical services has made these too independent of one another, with the result that they often scarcely know of one another's existence. In order to secure the best performance on the part of these services, it is eminently desirable to establish an interrelationship and a closer correlation of their labors and efforts. The mere enumeration of the present services shows their wide dissemination: governmental control of public health, workmen's insurance, control of industries, psychiatry, military medicine, including that of the army and navy, and now medical control of health insurance societies. The minister holds that a complete unification of these services is needed. At any rate, it would be well to establish an effective collaboration between them.

BERLIN

(From Our Regular Correspondent)

Nov. 15, 1924.

The Goiter Problem

At the convention of German scientists, Wegelin of Bern discussed the pathologic aspects of goiter. The endemic occurrence of goiter in various countries must not be regarded, without investigation, as identically the same manifestation, for goiter presents many different anatomico-pathologic aspects. Wegelin confined himself to the goiter of the Alpine countries. The enlargement of the thyroid gland, found almost universally in the inhabitants of the endemic regions, cannot be differentiated from goiter; it is, in fact, the foundation on which the clinically protruding goiters develop. Histologically, the goiter of the Alpine countries is, in its beginnings, always an epithelial hyperplasia, which in Bern is manifested even in the fetus and leads to struma congenita. This consists of firm cellular columns, simple and branched tubular glands and small, for the most part colloid-free spaces. In contrast with the iodin-containing thyroid gland of the new-born in nongoitrous countries, the thyroid is almost without exception free from iodin. The diffuse parenchymatous goiter of early childhood is the outgrowth of the struma congenita. The goiter in children has small follicles and usually presents distinct proliferation phenomena of the follicular epithelium. Colloids exist only in small quantities. Iodin is lacking almost entirely. From this early goiter there may develop in later childhood, or possibly not until after puberty, the diffuse colloid goiter, which, taken histologically, signifies a more or less complete return to normal, since the large colloid-containing follicles are found in like manner in the thyroids of nongoitrous countries. The lymphatics are engorged, which points to marked secretory activity of the glands. The epithelial growth either comes to a standstill or continues, in which latter case Sanderson cells appear in the walls of the large vesicles as proliferation centers. The absolute iodin content is usually increased, while the relative iodin content fluctuates. On the site of the diffuse goiter, struma nodosa frequently arises. Histologically, it corresponds in its individual forms, to a certain extent, to the developmental stages of the normal gland. The epithelial formations may combine in the same nodule. A combination of struma nodosa with struma diffusa is also very frequent. In the nodules—partly because of disturbances in circulation—the most manifold degeneration processes may take place. The iodin content varies greatly. The parenchymatous nodules are often iodin-free. In judging the functional condition of goiters, it should be remembered that the quantity of colloids present is dependent on secretion and resorption. In the parenchymatous diffuse goiter of the new-born and of the child, the amount of secretion at the time of the most rapid epithelial growth is slight, but at other times it is sufficient. By comparison, the diffuse colloid goiter is to be regarded as a better functioning gland. It tends, not infrequently, to clinical hyperthyreosis. In struma nodosa, the functional conditions are extremely variable. For the clinical picture, the individual sensitiveness to the thyroidal secretion is just as important as the histologic structure of the goiter. The theory of lack of iodin is not sufficient to explain the primary epithelial hyperplasia, which may be regarded as the basis of goiter development. It is probable that the hyperplasia, in case it is the result of increased functional demands, is produced by influences brought to bear from other parts of the body. Factors to be considered are: a definite bacterial flora of the intestine, infectious diseases, inadequate lumen, excess of certain foods, and pos-

sibly also, radioactive substances. The lack of iodin may, however, be an important contributory factor in the genesis of goiter, since such a deficiency impairs the secretion of the thyroid gland and renders it more difficult for it to fulfil its function in metabolism. Endemic cretinism, in spite of its complex nature and the marked effect of endogenous factors, is, in the main, a hypothyreosis.

CLINICAL ASPECTS OF GOITER

The paper on the physiologicopathologic and the clinical aspects of goiter was presented by F. Kraus of Berlin. The goiter problem is one not only of thyroid gland activity but also of individual constitution. The thyroid gland remains the center of a number of pathologic manifestations, but always in the sense that the functional value of the thyroid gland in relation to the constitution must be considered according to types and individuals. As regards the formation and genesis of the goiter diseases, Kraus takes essentially the same position as Wegelin. The physiologic events center around the iodin-containing hormone, thyroxin. This substance has as its chemical basis an indol ring, a combination of a benzene and a pyrrol ring. The three iodin atoms of thyroxin are attached to the indol ring. Although the presence of iodin in the compound no doubt exerts an influence, the specific effect of thyroxin appears to be due to the whole molecule. Iodin albumin as well as active thyroxin is soluble in acids, and the attachment of iodin to albumin takes place only with simultaneous cleavage. The by-products of this cleavage are acids. The specific effect of the hormone on metabolic processes is exerted through the CO-NH- (amido) group in the thyroxin molecule. In alkaline solution, the pyrrol ring opens through the addition of the elements of water, and thus the open-ring form arises. Through this change, the active hormone is converted into an inactive form, and is stored in the organism as a reserve substance. With an acid reaction, the ring is again closed, since the elements of water have again passed out, and the hormone again becomes active. According to researches by H. Zondek, the borderline of its effectiveness lies between $p_H = 6.4$ and $p_H = 7.0$, whereas the hormone has no effect on the physiologic reaction of the blood. The different effect of the closed and the open form may be demonstrated in the effect on metabolism, since 10 mg. of the active modification increases oxidative metabolism by 30 per cent., whereas the open ring form with the same iodin content exerts little or no effect. The equilibrium between storage and circulation may be disturbed by widely differing conditions. The localization of the evacuated hormone extends to and affects the energy production of all cells. Thyroxin abolishes the whole syndrome of an existing myxedema. In patients with complete atrophy of the thyroid gland, on the other hand, more than half of the normal oxidative basal metabolism is preserved. There are apparently other chemical substances which are decomposed in a similar manner to thyroxin. Similar relations exist between creatin and creatinin. It appears that the ingestion of thyroxin into the organism merely raises a reaction, already present, to a normal level, in which process amino-acids exert a favorable influence. But the reaction always stands in the foreground. Similar to the acid reaction is the effect of the union of the hormone with calcium. It is important that the active thyroxin does not act rapidly or toxically—not even in large doses. For experimental application, small quantities administered over a long period of time are the most favorable. If thyroxin remains for a long period in the tissues or organs in which it is expected to function, cachexia or even death may result. Exophthalmic goiter cannot be regularly produced by the injection of thyroxin. This occurs only in special types of constitution and should not be confused with the other types of thyroidism. According to experiments with thyroxin, we must generally assume the existence of an equilibrium between the thyroid gland, the blood and the tissues or organs in which thyroxin functions. According to the physiologic needs—probably also under the influence of other hormones—there is doubtless a periodic fluctuation of the thyroxin content in the tissues.

Kraus discussed also the relation between thyroxin and the oxidative basal metabolic rate, a relation that has an exceedingly important bearing on growth and development. In this connection he took up the question of cleavage and oxidation. This very important relation between oxidative respiration and cleavage is considerably modified by thyroid gland substance. Asher's discovery that rats deprived of the thyroid gland are abnormally insusceptible to a lack of oxygen, and that on feeding them thyroid gland the opposite condition is brought about, comes under this category. The actions of electrolytes were then considered, and especially the antagonism between potassium and calcium and their governing influence, which, however, is not the same in all organs. The relationships are exceedingly complicated. The effect of calcium is based on the evolution of hydrogen ions, and is for that reason of importance in connection with the action of thyroxin.

As for the clinical examination and diagnosis of goiters, it should be emphasized that only a fourth of the extirpated goiters are actually associated with symptoms of thyreotoxicosis. The first and most important diagnostic procedure to ascertain the condition of the thyroid is the determination of the basal metabolic rate. As a supplementary test, the measurement of the so-called average effect in the fatigue experiment, according to the Weber method, has been proposed. The testing of the vegetative system by pharmacologic means is also of value: the epinephrin blood pressure test applied to patients with exophthalmic goiter usually shows before operation or irradiation a sympathicotropic tendency, whereas, after the intervention, the excitability decreases and the curve may even become vagotropic. As regards treatment, goiter prophylaxis by means of continued administration of minute doses of iodin seems to give favorable results, but, in this connection, it must be remembered that iodin cannot be considered a harmless remedy. Evidence of an increase in goiter in all parts of the world is accumulating, on which account it behooves us to devote more time and attention to the problem.

Marriages

JAMES INGRAM PETERS, Alexandria, La., to Miss Brooksie Wheeler Wilbourn of Hernando, Miss., at New Orleans, November 1.

FRANK BENTON BREWER, Fort Bayard, N. M., to Miss Frances Ellis Coulson of Silver City, November 1.

ALF K. STRATTE, Pine City, Minn., to Miss Margaret A. Schwirtz of Wabasha, at Cass Lake, August 12.

ELTON RUSSELL CLARKE, Burbank, Calif., to Miss Ruth Carolyn Holman of Kokomo, Ind., October 11.

JOSEPH JUDAH BERKOWITZ, New York, to Miss Rebecca Garfunkel of Brooklyn, November 30.

SIDNEY WINFORTH COLLIER to Miss Margaret V'liet, both of Birmingham, Ala., October 9.

WILFRID B. FETTERMAN to Dr. Julia Faith Skinner, both of Philadelphia, November 26.

EDWARD VINCENT DEL BECCARO to Miss Carolyn Tunno, both of Chicago, November 13.

WARREN WOOD BABCOCK to Miss Edna Mae Wetherald, both of Detroit, November 14.

Deaths

Beverly Drake Harison, Detroit; secretary of the Michigan State Board of Registration in Medicine, died at the Battle Creek Sanitarium, December 6, following a long illness. Dr. Harison was born in New York, 1855, and was educated at Bishop's College, Quebec; Trinity College, Toronto; University of Toronto Faculty of Medicine, from which he received his M.D. degree in 1901. He practiced medicine in Ontario, Canada, then at Sault Ste. Marie, Mich., moving to Detroit in 1906. Dr. Harison was a pioneer in medical legislation, prominent in securing for his state its medical practice act, the first and only secretary of the Michigan State Board of Registration in Medicine, and the organizer and secretary of the American Confederation of Reciprocating state medical boards. He was a member and formerly president of the Michigan State Medical Society, an officer in the Medical Corps of the army during the World War, and the author of numerous essays on medical reciprocity.

Walter Elmore Fernald, Waverley, Mass.; Medical School of Maine, Portland, 1881; associate professor of mental diseases, Tufts College Medical School, Boston; lecturer on mental diseases of children, Harvard Graduate School of Education, Boston; member of the Massachusetts Medical Society, the American Neurological Association, the American Academy of Medicine, the American Psychiatric Association, the Association for Research in Nervous and Mental Diseases, the American Orthopsychiatric Association, the American Institute of Criminal Law and Criminology and the National Committee for Mental Hygiene; president of the Massachusetts Psychiatric Society; superintendent of the Massachusetts School for the Feeble Minded since 1887; aged 65; died, November 27.

John Bingham Roberts ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1874; University of Pennsylvania School of Medicine, Philadelphia, 1888; emeritus professor of surgery, Graduate School of Medicine of the University of Pennsylvania; professor of surgery, Woman's Medical College of Pennsylvania, 1890-1900; member of the American Surgical Association (formerly president); past president of the American Academy of Medicine, the Medical Society of the State of Pennsylvania and the Philadelphia County Medical Society; formerly on the staff of the Methodist Episcopal Hospital; author of "Paracentesis of Pericardium," "Compend of Anatomy," "Surgery of Human Brain," and many other works; aged 72; died, November 28, of a skull fracture, received in an accident.

William Koenig Spiece ✠ Chicago; University of Illinois College of Medicine, Chicago, 1895; associate professor of ear, nose and throat diseases, Loyola University School of Medicine, Chicago; on the staffs of the Illinois Masonic Hospital and the Illinois Eye and Ear Infirmary; aged 52; died, November 28, of pneumonia.

Harold Joseph Battalora, New Orleans; Tulane University of Louisiana, School of Medicine, New Orleans, 1923; intern at the Charity Hospital; aged 22; died in November, at the Baton Rouge (La.) General Hospital, of injuries received when the automobile in which he was driving overturned.

Anna Odell ✠ Detroit; University of Michigan Medical School, Ann Arbor, 1900; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 50; died in November, at the Mercy Hospital, Toledo, Ohio, of injuries received in an automobile accident.

Rudolph Menn, Chicago; University of Vienna, Austria, 1886; formerly on the staffs of the Columbus, Grant and Cook County hospitals; aged 62; died, December 2, at St. Luke's Hospital, of peritonitis following an operation for carcinoma of the colon.

J. Hope Lamb, Fort Stanton, N. M.; Medical Department of the Tulane University of Louisiana, New Orleans, 1888; for fifteen years medical quarantine officer at New Orleans; on the staff of the U. S. Marine Hospital No. 9; aged 58; died suddenly, November 15.

William Taylor, Canastota, N. Y.; Medical Department of the University of the City of New York, 1862; member of the Medical Society of the State of New York; Civil War veteran; aged 85; died, November 19, at Oneida, of heart disease.

James Daniel Miller, Pasadena, Calif.; New York Homeopathic Medical College and Hospital, 1899; Jefferson Medical College of Philadelphia, 1901; formerly a practitioner in New York; aged 47; died, December 1, at Chicago, of heart disease.

George Herbert Minard, Lockport, N. Y.; University of Buffalo Department of Medicine, 1897; formerly mayor and health commissioner of Lockport; for several years member of the board of health; aged 52; died, November 17, of heart disease.

Stephen Decatur Harrison ✠ Elmira, N. Y.; Medical Department of Columbia College, New York, 1879; specialized in ophthalmology, otology, laryngology and rhinology; aged 69; died, November 21, of cerebral hemorrhage.

J. Sothoran Keech ✠ Racine, Wis.; University of Maryland School of Medicine, Baltimore, 1888; specialized in ophthalmology, otology, laryngology and rhinology; aged 61; died, November 19, of heart disease.

James A. Cooper, Terre Haute, Ind.; Medical College of Evansville, 1851; member of the Indiana State Medical Association; aged 94; died, November 24, at the Union Hospital, of cerebral hemorrhage.

George Van Rensselaer Merrill, Elmira, N. Y.; Medical Department of Columbia College, New York, 1863; member of the Medical Society of the State of New York; aged 83; died in November.

Elihu Proctor Pierce, Winchester, N. H.; Berkshire Medical College, Pittsfield, Mass., 1857; Civil War veteran; aged 90; died, October 27, at the Memorial Hospital, Brattleboro, Vt.

Jacob Shartsis, Brooklyn; Long Island College Hospital, Brooklyn, 1909; member of the Medical Society of the State of New York; aged 53; died, August 2, of angina pectoris.

Laurence De Lancy Gorgas ✠ Chicago; University of Maryland School of Medicine, Baltimore, 1883; aged 63; died, November 26, of endocarditis and pneumonia.

Leslie Allen Sutton, Massena, N. Y.; Medical Department of the University of the City of New York, 1889; aged 58; died, November 17, of cerebral hemorrhage.

Charles Harker, Mount Holly, N. J.; Jefferson Medical College of Philadelphia, 1884; aged 73; died, November 17, at Oxford, of acute dilatation of the heart.

Sadie Hopner Lightman, Lowell, Mass.; College of Physicians and Surgeons, Boston, 1916; aged 30; was killed, November 28, in an automobile accident.

Simon Grim, Evansville, Ind.; Hospital Medical College of Evansville, 1883; aged 65; died, October 10, at Cole City, of heart disease and cerebral hemorrhage.

Franklin Jonas Holben, Schnecksville, Pa.; Bellevue Hospital Medical College, New York, 1889; aged 56; died, November 30, following a long illness.

Carlton Graves ✠ Aitkin, Minn.; Medical Department of the University of the City of New York, 1878; aged 68; died, November 20, of angina pectoris.

Kate McClure Johnson Harris, Wooster, Ohio; University of Michigan Medical School, Ann Arbor, 1900; aged 56; died, November 13, of diabetes mellitus.

Sidney Eugene Hulett, Los Angeles; Hahnemann Medical College and Hospital, Chicago, 1876; formerly a practitioner in Chicago; died in November.

James Francis Sullivan, Lowell, Mass.; Medical School of Harvard University, Boston, 1882; aged 66; died, August 6, of carcinoma of the stomach.

Joseph Jacob Davis, Kincaid, Ill.; Rush Medical College, Chicago, 1886; aged 61; died, October 21, at Minneapolis, of carcinoma of the rectum.

Max Jackson ✠ Macon, Ga.; Medical Department of Columbia College, New York, 1888; aged 59; died suddenly, November 18, at Miami, Fla.

Melvin Dorwin Smith, Pelham, N. Y.; Eclectic Medical College of the City of New York, 1881; aged 76; died, November 15, at New York.

Leroy S. Chadwick, Jacksonville, Fla.; University of Wooster Medical Department, 1877; aged 71; died, August 2, of cerebral hemorrhage.

William Grieve Nichol, Montreal, Que., Canada; University of Bishop College Faculty of Medicine, Montreal, 1886; aged 61; died, in October.

William J. Barnett, Westerville, Ohio; Kentucky School of Medicine, Louisville, 1879; aged 77; died, October 12.

Charles Choisser, Eldorado, Ill. (licensed, Illinois, 1878); aged 87; died, November 18, following a long illness.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

VALAMIN NOT ACCEPTED FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report. W. A. PUCKNER, Secretary.

"Valamin" is stated to be "Amylene Hydrate Iso Valerianate," that is, an ester produced by the combination of the alcohol known as amylene hydrate and isovalerianic acid. It is a product of Dr. Neumann and Co., Chemische Fabrik, G.m.b.H., Berlin, Germany, marketed in the United States by the American Kreuger and Toll Corporation, New York.

According to the advertising of the American agent, "Valamin is a dependable sedative and analeptic and is an absolute essential to the medical practitioner." It is suggested that "Opportunities for the employment of such a drug are countless." After admitting that valerian has fallen into disuse "on account of its failure, through its apparent lack of therapeutic merit, to give results," the advertising continues: "Valamin, a recently discovered medicinal agent, is likely to restore Valerian to popular favor with the medical profession. . . ."

The claim is made that Valamin combines the hypnotic action of amylene hydrate and those of valerian with the advantage of greater activity and uniformity of action. It is stated that the odor of valerian has been overcome satisfactorily by the addition of "suitable pleasant smelling substances." The claimed greater activity of Valamin as compared with amylene hydrate is explained by its greater ratio of solubility in lipoids to that in water.

Nine literature references are given in the Valamin advertising. All but one appeared at least nine years ago, and thus contradict the statement that Valamin is a recent discovery. The claims which are based on these publications are such as might be made for practically any hypnotic and give no indication that Valamin has any special value.

An examination of the indexes of THE JOURNAL for ten years past reveals no reference to the therapeutic use of valerian or the valerates. The only article on amylene hydrate is a report of a fatality following the rectal administration of 35 gm. to a man.

Amylene hydrate (tertiary amyl alcohol), alone and in combination, has been used for many years, but it has not established itself as superior to other hypnotics in general use. Of the many valerian preparations which have been introduced from time to time, but a single one is now contained in New and Nonofficial Remedies; and Valamin does not possess the advantage of other valerian esters, namely, that of not giving rise to eructation. This disadvantage of Valamin is brought out by several authors in the advertising who state that Valamin causes eructation to some extent.

The Council declared Valamin inadmissible to New and Nonofficial Remedies, because (1) the therapeutic claims are unwarranted and (2) because more than ten years of trial have failed to produce evidence that it presents a useful addition to our materia medica.

VALERIAN OMITTED FROM USEFUL DRUGS AND AMYL VALERATE OMITTED FROM N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report. W. A. PUCKNER, Secretary.

For some years the Council has been viewing the claims for the therapeutic value of valerian and valerian preparations and substitutes with increasing skepticism. During the period 1915 to 1921, the Council questioned the claims made for proprietary valerian preparations then in New and Nonofficial Remedies—New Bornyval (borneol isovaleryl glycolate), Gynoval (isoborneol isovalerate) and Validol (menthyl valerate)—and informed the distributors of these that the preparations would be omitted unless the claims advanced for them were substantiated or revised to agree with the available evidence. In the end, these products were omitted because they were off the market. The Council also denied admission to a Validol substitute, Menthol Valerianate-McK. & R.

Valerian has been retained in Useful Drugs because it is used to a considerable extent. This use, however, appears to be based on tradition. The following statement of the action of valerian appears in Useful Drugs:

"Valerian is thought to be an antispasmodic and nerve sedative, but its influence is largely psychic, and in the ammoniated tincture the stimulating effects of the aromatic spirit of ammonia no doubt predominate."

The indexes of THE JOURNAL from 1908 to June 30, 1924, afford no reference to any article dealing with the therapeutic value of valerian or its substitutes. The work of Pilcher, Burman and Delzell (*Arch. Int. Med.* **18**:557 [Nov.] 1916) does not support the therapeutic claims commonly made for valerian and its substitutes.

The Council has reached the conclusion that there is no acceptable evidence for the therapeutic usefulness of valerian or the valerian substitutes now on the market. It, therefore, decided: (1) to omit valerian from Useful Drugs; (2) to omit the general article "Valeric Esters" along with amyl valerate (the only preparation now in the book) from New and Nonofficial Remedies, and (3) to admit to New and Nonofficial Remedies no preparation which depends on valerian or its constituents, unless satisfactory *new* evidence of its therapeutic value is submitted.

Correspondence

MATHEMATICS AND MEDICINE

To the Editor:—One of the students in the Home Study Department at Columbia, who is a practicing physician and who is taking one of our courses in mathematics, sent us a clipping from your issue of September 27, evidently an editorial, entitled "Medicine and Mathematics." This has interested us very much for the simple reason that this department at Columbia was organized primarily for service to individuals who wish to study certain subjects but who cannot conform to the demands of a formal academic curriculum. Busy professional men, such as physicians, might find the University Home Study course in mathematics exceedingly useful, and it occurred to me that perhaps some of your readers would be glad to know that Columbia University conducts a series of mathematics courses which can be used by the busy professional man in his spare moments.

LEVERING TYSON, New York.
In Charge of Home Study,
Columbia University.

CONSTIPATION AND "AUTOINTOXICATION"

To the Editor:—In the December issue of *Hygeia* there appears an article on constipation by Dr. Walter Alvarez. The deductions arrived at in this article are based on the results of a study made on a number of young, apparently normal persons by Dr. Alvarez and Dr. Freedlander, who published their observations in THE JOURNAL, August 23. In a communication to THE JOURNAL, September 20, Dr. Morris I. Bierman stated that Alvarez's work on "The Rate of Progress of Food Residues Through the Bowel" was based on an erroneous statement of fact, and attempted to prove this by citing his own roentgenologic observations. Dr. Alvarez's reply to this was published in the same issue. October 18,

Dr. W. H. Hay of Buffalo, in a communication to THE JOURNAL, objected to Alvarez's statements as being misleading, and feared that their acceptance by physicians would result in great harm being done many patients through their having a prolific source of intestinal toxemia ignored. Dr. J. H. Kellogg of Battle Creek asserts that two and three movements a day are necessary for the maintenance of good health. Alvarez feels that one movement every two or three days may be consistent with good health. With such a wide divergence of opinion it would seem that this whole subject of intestinal toxemia is in a chaotic state, and that physicians and patients alike would be more benefited by letting Nature take its course, unmindful of all the charcoal, bead and roentgenologic studies made.

Until this subject was presented to the laity in *Hygeia* by Dr. Alvarez, I was an interested observer of the efforts being made to arrive at a satisfactory determination of what constitutes intestinal stasis and its subsequent toxemia. Now I wish to take issue with some of the statements made in the article, because, with Dr. Hay and many others, I feel that such teaching of the public is not supported by an accurate and final analysis of the problem, and that further studies agreeing with Alvarez's conclusions must be made.

It is well to consider that Alvarez's studies were made on young, apparently healthy persons who would present only transient or functional effects, if any, of toxemia. The pathologic conditions ascribed to intestinal poisoning ordinarily do not present themselves before middle or late life.

Dr. Alvarez states that he has determined from his own roentgenologic observation that the entire intestinal tract is practically empty of any given meal at the end of forty-eight hours, and this occurs without any preliminary purgation which otherwise, within forty-eight hours of the examination, has been shown to accelerate transit through the bowel. This coincides with studies made by Hurst, Jordan, Case and others. There is some question also, especially among English observers, whether barium or bismuth interferes to any considerable degree with normal peristalsis of the intestine; for all practical purposes it would seem more advisable to continue to base our deductions as to the motility of the bowel on studies made with these substances. Does it seem reasonable, then, to infer that it is compatible with good health for food to stay in the body seven days because it takes this long for a number of young, healthy persons to eliminate from 90 to 100 per cent. of a given number of glass beads? They seem like most unnatural mediums for such study, and may their use not account for the mushy, unformed, badly digested stools that were seen at the end of twenty-four hours in some of the subjects?

As Alvarez points out, it may be quite true that there is a minimum of absorption from the dry fecal masses passed by constipated persons. As a result, he believes that they are less apt to suffer from intestinal poisoning than those passing soft or liquid movements. However, it has been demonstrated, I think by Case, that an accumulation in the distal colon of unusual amounts of fecal matter, which afford obstruction to normal peristalsis, leads to dilatation and weakening of the proximal colon. Furthermore, antiperistalsis, which begins at the distal third of the transverse colon, is increased, and the bacteria-laden liquid contents of an ascending colon or cecum may be prolonged there and even regurgitated into the ileum, where no one will question that absorption is rapid. It is under such conditions that true intestinal toxemia probably occurs.

Some of the amins that are formed as a result of the amino-acids being subjected to putrefaction have been shown to possess definite physiologic action; and while it is true that a normal liver and other agencies of the body exert a powerful detoxifying effect on these amins, the question nevertheless is raised as to whether or not persons who have long suffered from intestinal toxemia possess a normally functioning liver. The clinical evidence to date, though it may not be conclusive, strongly suggests that pathologic changes do occur in the liver and other organs as a result of such putrefaction; and call it autointoxication or what one may, there is enough of this evidence to convince many of the profession that such a condition exists, and that it is not compatible with good health.

The public is to be congratulated in having one of Dr. Alvarez's skill and experience write for them in *Hygeia*, and the medical profession is greatly indebted to him for his many valuable contributions to medical literature.

RUSSELL S. BOLES, M.D., Philadelphia.

DIANASIAC TABLETS AND TOXICIDE

To the Editor:—During the past year, William Wood and Company of New York published a small book of mine on the study of masturbation. A letter which J. F. Ruckel, M.D., Chicago, sent me, was amusing. It shows that some of the fallacies of the fourteenth century are still being practiced today. He claims to have cured 2,000 cases of this habit with a few tablets a day. These tablets are called Dianasiac, and are made by the Toxicide Laboratories of White Pigeon, Mich. They are said to be "a glandular product (?) to equalize the distribution of nerve energy." He says that the same tablets are good for boils, carbuncles, infections and wounds. Three of the four ingredients in the tablets are lachesis, tarantula and psorinum, which the dictionary gives, respectively as venom from a snake, a poisonous spider, and a form of pus. This, in 1924, in the United States sounds rather humorous. The credulity of some people passes ordinary understanding. I might add that he says he names his tablet after the goddess of love. So this tablet must be put down as another of Love's indiscretions.

JOHN F. W. MEAGHER, M.D., Brooklyn.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CALCIUM CHLORID AS ANTIFREEZE MIXTURE

To the Editor:—Several years ago, while I was practicing in the country, I was in the habit of using in my automobile radiator a solution of chemically pure calcium chlorid. I used this for two or three years and found it very satisfactory with a car having a pump. I tried this solution in my Ford car a short time ago and, possibly because of the fact that the Ford has no pump, the results were not satisfactory. Have you any data as to how much calcium chlorid would be required to make a solution that will not freeze? I am reasonably sure that the salt used was calcium chlorid, although it is barely possible that it was some other salt.

FLOYD CLARKE, M.D., Omaha.

ANSWER.—Calcium chlorid has been used as an antifreeze mixture for automobile radiators, but its use is not to be recommended, because of its corrosive action on the radiator and also at times the likelihood of clogging the small radiator spaces.

The market product "Freeze-Proof" was analyzed in the American Medical Association Chemical Laboratory a number of years ago and found to consist essentially of commercial calcium chlorid.

According to an article in the *Journal of the American Chemical Society* (1918, p. 1209), a 34 per cent. solution of anhydrous calcium chlorid in water will freeze at about —22 F., and a 36 per cent. solution at —24 F. It is possible to obtain a 48 per cent. solution of anhydrous calcium chlorid in water which would freeze at about —58 F. A solution of this strength, however, would be very impracticable because of the liability of crystallization. The foregoing figures are

given for chemically pure anhydrous calcium chlorid. As commercial calcium chlorid contains about 70 per cent. of anhydrous calcium chlorid, correspondingly larger amounts of material would have to be taken. The general rule is to fill radiators with the solution containing commercial calcium chlorid in the proportion of 2½ pounds of the salt to each gallon of water; this gives protection to about 20 degrees below zero Fahrenheit.

GLUCOSE AS ANTIFREEZE MIXTURE

To the Editor:—After reading your reply to Dr. Tudor of Exeter, Va., in Queries and Minor Notes (THE JOURNAL, October 25, p. 1356), I am constrained to give part of my experience with glucose in an antifreeze mixture.

About a year ago there was a general discussion of the use of glucose, and I tried the freezing point of three strengths of the solution and found as follows:

33 per cent glucose and 67 per cent. water hardened at 22 F.
50 per cent. glucose and 50 per cent. water hardened at 18 F.
100 per cent. glucose did not harden at 0 F., but was so heavy that I did not try it further.

I put the 33 per cent. solution in my radiator and found that though the radiator would hold water perfectly it would not hold this solution, and before I realized it the entire engine was a sticky mess. Aside from this, if the weather was at all cold the solution became so stiff that it would not circulate, and unless the radiator was completely covered until the temperature rose to 150 F. or above, the solution around the cylinders would boil while in the lower part of the radiator it would be "frozen."

With the higher boiling point of the solution, the result was a considerably overheated engine.

I shortly discarded the glucose and put in alcohol, which has been, on the whole, much more satisfactory.

WILLIAM H. GOODSON, M.D., Liberty, Mo.

ROENTGENOTHERAPY OF CARBUNCLES — ROENTGEN RAY AND STERILITY — THE FARADOR

To the Editor:—I shall be obliged for information about the following: 1. In THE JOURNAL, July 5, page 63, is an abstract of a paper by F. M. Hodges on "Roentgenotherapy of Carbuncles." I shall appreciate information about technic and dosage. 2. What roentgen-ray dosage can cause sterility of the male and of the female, respectively? 3. They have begun to push here the so-called "farador." I think it must be along the lines of the so-called "oxypathor." Can you furnish some information?

NARCISO SOUZA, M.D., Mérida, Yucatán, México.

ANSWER.—1. The technic for roentgenotherapy of carbuncles includes: unfiltered radiation; 5 inch gap; 5 milliamperes; 15 inches skin target distance; time, five minutes. One half of this dose, namely, two and one-half minutes' time, may be given again in three days. Care should be taken not to irradiate normal tissue.

2. Roentgen-ray sterility may be either temporary or permanent. The temporary sterility lasting from one to eight months in females is achieved when from 20 to 35 per cent. of a skin erythema dose reaches the ovaries. A sterility lasting from eight to thirty-two months or longer is achieved by giving the ovaries from 35 to 50 per cent. of a skin erythema dose. Seitz and Wintz give the castration dose in male or female as being 35 per cent. of a skin erythema dose.

3. Apparently, the "farador" contains a simple thermopile, which, when subjected to changes of temperature, would naturally produce a mild electric current. This current, however, would differ in no way from an electric current generated by a dynamo or a battery cell. The exploiters of the "farador" have in the past exploited the thing under the claim that the device causes the body to absorb oxygen. The idea that sending a mild electric current through the body will cause the system to absorb oxygen is preposterous.

DRAINAGE OF APICAL ABSCESSES OF TEETH

To the Editor:—I have a patient whose symptoms suggest a chronic infection. Roentgen-ray examination of the teeth revealed four apical abscesses. I referred him to his dentist, who told him that extraction was entirely unnecessary, and that by drilling into the teeth through into the abscess pocket, this could be drained and the infection cleared up. I told my patient that if the dentist could get away with that, he was too high a man for such a small town. Do you think this sort of so-called drainage will clear up the focus of infection? Is this an original idea or the exhuming of an old one?

M.D.

ANSWER.—The inquirer evidently does not fully understand what the dentist meant. He did not intend to convey the thought that he could cure an apical infection by simple drainage through the root canal, though an acute apical infection may, in some instances, be drained through the canal. What the dentist meant was that by opening up the canal, removing its necrotic contents and then applying disinfectants, the canal as well as the infected zone surrounding the apex of the root could be rendered sterile. If this is done, and the root canal thoroughly filled to its apex, the tooth is made safe, as fully indicated by roentgenograms made before and after treatment. It is an erroneous though common belief that a pulpless tooth is a dead tooth and must be extracted. The pulp of a tooth is the remains of the formative organ of the tooth, and in very old persons it is sometimes practically eliminated by a continuation of its principal function, which is the building of the dentin. The life of the cementum of the root of a tooth comes principally from the peridental membrane and, so long as this part of a tooth is alive, its root is not dead. If the peridental membrane dies, then and only then does a tooth become dead or necrosed.

Evidently this country dentist has had good training and is keeping abreast with the science of his profession. On the contrary, he is not "too high a man" for a small town, but is just the type of dentist that small towns need.

BLACK HAIR DYE

To the Editor:—I wish to thank you for your letter in regard to Paul's hair dye. I can find nothing in the literature at my command in regard to such preparations, so I am asking you to suggest some black hair dye that is safe and not injurious. Women will use these things, and I should like to be able to advise them in the use of a dye that will not injure the hair.

T. R. WHITE, M.D., Kingman, Ariz.

ANSWER.—No black hair dye can be considered safe and not injurious. Every chemical used for dyeing the hair black is a potential trouble maker. Some individuals who are not sensitized may use even paraphenylendiamin for long periods without causing any disturbance, whereas others may not use silver nitrate or pyrogallic acid. These facts should be given to the patient, and the patient should be obliged to assume the responsibility if dermatitis follows. The susceptibility of the patient to the dye can be determined by an application of the material to a covered portion of the body; and, if a dermatitis is produced, it can be more readily managed than if the entire scalp were irritated.

SCHLEICH'S PASTE

To the Editor:—Many years ago, I used a paste recommended by Schleich for the healing of an extensive ulcer on the leg. I got very good results, but used the paste only once, as the old way of curing with rubber stockings and bandages was more simple. I now wish to use Schleich's paste on a patient with an edematous arm, but unfortunately have forgotten the formula for the paste, and wish to apply it. I remember that peptone was incorporated in it. Can you give me the formula?

JULIUS FRANKL, M.D., Los Angeles.

ANSWER.—Pasta peptonata (Schleich) is a nonirritant adhesive paste, an organic skin glue which can be used even over hairy portions in the same manner as Unna's paste, in order to immobilize gauze bandages on wounds, covering them with a veil of gauze, to the borders of which, or the periphery of which, the paste is added so as to fix it over the wound.

This is used for the ulcer of the leg and can be combined with bismuth subgallate in other places, particularly on mucous membranes. They are removed with warm water.

WELDONA

To the Editor:—Can you tell me the composition of "Weldona," a remedy for rheumatism made by the Weldona Company of Boston?

H. C. S., New Hampshire.

ANSWER.—The number of inquiries about this rather obvious piece of quackery has not been sufficient to warrant the expense of detailed analysis. Some preliminary tests were made in the A. M. A. Chemical Laboratory some time ago. The chemists reported that the "treatment," apparently, consists of two parts, a few small white tablets and a large number of lavender-coated tablets. The white tablets were labeled "For Constipation Only." They were found to be coated with calcium carbonate, and the medicinal portion consisted of an emodin-bearing vegetable extract, probably cascara. The lavender-colored tablets were coated with calcium carbonate and sugar. The medicinal portion was found to contain sodium salicylate and an unidentified vegetable extractive. Alkaloids, iodids, acetylsalicylic acid, phenyl salicylate and cinchophen were absent.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 13. Chairman, Dr. S. W. Welch, Montgomery.

ARIZONA: Phoenix, Jan. 6. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.

COLORADO: Denver, Jan. 6. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Jan. 13-15. Sec., Dr. Edgar P. Copeland, 104 Stoneleigh Court, Washington.

HAWAII: Honolulu, Jan. 12. Sec., Dr. G. C. Milnor, 401 Beretania St., Honolulu.

ILLINOIS: Chicago, Jan. 6-8. Supt. of Regis., Mr. V. C. Michels, Springfield.

INDIANA: Indianapolis, Jan. 13. Sec., Dr. W. T. Gott, 333 State House, Indianapolis.

MINNESOTA: Minneapolis, Jan. 6-8. Sec., Dr. Thomas McDavitt, 734 Lowry Bldg., St. Paul.

NEW YORK: Albany, Buffalo, New York, Syracuse, Jan. 26-29. Chief, Mr. Herbert J. Hamilton, State Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 6. Sec., Dr. G. M. Williamson, Grand Forks.

OKLAHOMA: Oklahoma City, Jan. 13-14. Sec., Dr. J. M. Byrum, Shawnee.

OREGON: Portland, Jan. 6-8. Sec., Dr. U. C. Coe, 1208 Stevens Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 27-31. Pres., Dr. I. D. Metzger, 322 Aiken Ave., Pittsburgh.

RHODE ISLAND: Providence, Jan. 1-2. Sec., Dr. B. U. Richards, State House, Providence.

SOUTH DAKOTA: Pierre, Jan. 20. Dir., Dr. H. R. Kenaston, Bonesteel.

UTAH: Salt Lake City, Jan. 6. Dir. of Regis., Mr. J. T. Hammond, State Capital, Salt Lake City.

WASHINGTON: Olympia, Jan. 12. Sec., Mr. Wm. Melville, Olympia.

WISCONSIN: Madison, Jan. 13-15. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., La Crosse.

Illinois June Examination

Mr. V. C. Michels, superintendent of registration, Illinois Department of Registration and Education, reports the written and practical examination held at Chicago, June 24-26, 1924. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 71 candidates examined, 37 passed and 34 failed. Eight candidates were licensed by reciprocity, and 2 candidates were licensed by endorsement of credentials. Of the 31 osteopaths examined, 24 passed and 7 failed. Seven chiropractors failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago Medical School	(1923, 6) 75, 75, 75, 75, 78,		79
Loyola University	(1918) 75, (1923)		78
Northwestern University	(1906)		77
Rush Medical College	(1924)		81
University of Illinois	(1924, 2) 82, 82, (1924)*		76
Washington University	(1923, 2)	79,	85
University and Bellevue Hospital Medical College	(1915)		79
Meharry Medical College	(1918, 2) 78, †, (1923)		75
Queen's University Faculty of Medicine	(1922)		82
University of Vienna, Austria	(1923)‡		78
University of Berlin, Germany	(1919)‡ 76, (1922)‡ 81, (1923)‡		75
University of Bonn, Germany	(1916)		76
University of Leipzig, Germany	(1920)‡		80
University of Munich, Germany	(1913)‡ 77, (1918)		79
University of Budapest, Hungary	(1914)‡		77
University of Szegedin, Hungary	(1911)‡ 75, (1913)‡ (1919)‡ 80, (1922)‡ 78		75,
University of Rome, Italy	(1920)‡		76
Ekaterinoslaw State Medical Academy, Russia	(1921)‡		79
University of Basel, Switzerland	(1921)‡		76
University of Zurich, Switzerland	(1911)‡		77

College	FAILED	Year Grad.	Per Cent.
Howard University	(1923)		65
Chicago Hospital College of Medicine	(1917)		68
Chicago Medical School	(1922, 2) 69, †, (1923, 3) 60,	63,	73
Jenner Medical College	(1917)		63
Reliance Medical College	(1911)		73
New Orleans University	(1900)		20
St. Louis College of Physicians and Surgeons	(1918)		62
University of the City of New York	(1883)		67
Meharry Medical College	(1914) 28, (1918) 66, (1921) (1922, 2) 66, 75,‖ (1923, 2) 53, 64		72,
Vanderbilt University	(1920)		70
Western University Medical School	(1918)		63
Comenian University, Bratislavia, Czechoslovakia	(1920)‡		78‖
National University, Athens, Greece	(1917)‡		66
University of Budapest, Hungary	(1911)‡ 66, (1908)		†
University of Naples, Italy	(1920)‡		62
University of Cluj, Roumania	(1922)‡		55
University of Jurjev, Russia	(1917)‡		77‖
University of Kharkov, Russia	(1915, 2)‡ 74, †, (1919)‡		75‖
University of Moscow, Russia	(1916)‡		57
University of St. Vladimira, Kief, Russia	(1919)‡ 77‖, (1923)‡		62

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University	(1911)		Wisconsin
Johns Hopkins University	(1921)		Maryland
University of Michigan	(1922)		Michigan
University of Minnesota	(1923)		Minnesota
St. Louis University	(1906), (1920),	(1922)	Missouri
Meharry Medical College	(1923)		Kentucky

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Washington University	(1914)		U. S. Army
University of Pennsylvania	(1915)		N. B. M. Ex.

* This candidate has completed his medical course, and will receive his M.D. degree on completion of a year's internship in a hospital.
† No grade given.
‡ Graduation not verified.
‖ Failed in certain subjects.

California July Examination

Dr. C. B. Pinkham, secretary, California Board of Medical Examiners, reports the written examination held at San Francisco, July 7-10, 1924. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of the 173 candidates examined, 161 passed and 12 failed. Sixty-one candidates were licensed by reciprocity, and 1 candidate was licensed by endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Medical Evangelists	(1923, 2) 77.3, 81.8, (1924, 52) 75, 75.9, 76.1, 76.9, 77.1, 77.4, 78.4, 78.4, 78.5, 78.6, 79.2, 79.3, 79.6, 79.8, 80.1, 80.7, 80.9, 80.9, 81.2, 81.3, 81.3, 82.1, 82.6, 82.7, 82.9, 83.1, 83.3, 83.4, 83.7, 83.8, 83.9, 84.2, 84.5, 84.9, 84.9, 85, 85, 85.3, 85.7, 86.2, 86.3, 86.3, 86.7, 86.8, 86.9, 87, 87.1, 87.7, 87.7, 87.8, 87.8, 88		
College of Physicians and Surgeons, Los Angeles	(1921)		81.1
Stanford University	(1923) 82.6, (1924, 22) 79.7, 82.6, 82.8, 83.2, 83.7, 83.8, 83.9, 84, 84.2, 84.4, 85, 85.1, 85.2, 85.4, 85.6, 85.6, 85.9, 87.1, 87.9, 90.8	75,	78.9,
University of California	(1920) 87.7, (1923) 85, (1924, 40) 78.1, 78.7, 79.8, 80.4, 80.6, 80.9, 80.9, 81.3, 81.8, 81.8, 82.2, 82.3, 82.4, 82.6, 82.6, 82.7, 82.8, 83, 83.2, 83.3, 83.7, 83.9, 83.9, 84, 84.1, 84.7, 85.1, 85.1, 85.6, 85.7, 86.1, 86.3, 86.6, 86.8, 86.8, 87.1, 87.7, 88.3	75.5,	75.7,
University of Colorado	(1923, 2)	83.4,	83.6
Northwestern University	(1918) 82.9, (1924, 2)	76.1,	85.4
Rush Medical College	(1919) 77.1, (1923) (1924, 8) 81.8, 82.6, 82.9, 83.3, 84, 86.6, 91.2, 91.7		84.2,
University of Illinois	(1912) 80.8, (1917)		78
Johns Hopkins University	(1922) 84.8, (1923)		75.7
Detroit College of Medicine and Surgery	(1924, 2)	76.7,	76.9
University of Minnesota	(1923, 2)	83.2,	84.3
Washington University	(1923) 77.9, (1924, 2)	78.1,	88.1
Western Reserve University	(1924)		82.6
University of Oregon	(1923)		77.6
Hahnemann Medical Coll. and Hosp. of Philadelphia	(1924)		79.1
University of Pennsylvania	(1920) 89, (1923)		87.4
Woman's Medical College of Pennsylvania	(1922)		84.2
University of Toronto Faculty of Medicine	(1923)		77.3
University of Paris, France	(1911)*		76.6
University of Breslau, Germany	(1922)*		75
University of Heidelberg, Germany	(1908)		83.7
University of Munich, Germany	(1908)		84.6
University of Amsterdam, Netherlands	(1909)*		77.9
University of Petrograd, Russia	(1913)*		80.2
University of Aberdeen, Scotland	(1897)		99.3
Syrian Protestant College, Beirut, Syria	(1914)*		78.6

College	FAILED	Year Grad.	Per Cent.
College of Medical Evangelists	(1924, 3) 70.7,	72.6,	73.9
College of Physicians and Surgeons, Los Angeles	(1920)		58.9
Howard University	(1922)		65.9
Chicago College of Medicine and Surgery	(1914)		69.9
St. Louis University	(1922)		69.6
University of Vienna, Austria	(1909)*		66.2
University of Paris, France	(1900)*		59.3
University of Göttingen, Germany	(1923)*		69.6
University of Saratov, Russia	(1917)*		56.2
University of Tomsk, Siberia, Russia	(1914)*		63.1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Denver and Gross College of Medicine	(1907)		Utah
Bennett College of Eclectic Medicine and Surgery	(1908)		Illinois
Chicago Coll. of Med. and Surg.	(1909) Illinois, (1910)		Penna.
Chicago Homeopathic Medical College	(1879) Utah, (1902)		Illinois
College of Physicians and Surgeons, Chicago	(1896)		Illinois
Hahnemann Medical College and Hospital, Chicago	(1884)		Illinois
Illinois Medical College	(1905)		Illinois
Northwestern University	(1904) Montana, (1916)		Illinois
Rush Medical College	(1887) Illinois, (1897) (1903) Illinois, (1908) Iowa, (1911) Montana		Oklahoma
University of Illinois College of Medicine	(1911) (1911), (1912), (1916) Illinois		Utah
Indiana Univ. Sch. of Med.	(1909), (1919), (1921),	1922)	Indiana
State University of Iowa College of Med.	(1895), (1903)		Iowa
Kansas Medical College, Topeka	(1907)		Kansas
Flint Medical College	(1909)		Oklahoma
Johns Hopkins University	(1909), (1920)		Maryland
University of Maryland	(1903) Maryland, (1916)		N. Carolina
Harvard University	(1886)		Mass.
Saginaw Valley Medical College	(1899)		New Mexico
University of Minnesota	(1914)		Minnesota
Ensworth Medical College	(1900) Utah, (1910)		Missouri
University Medical College of Kansas City	(1912)		Kansas
Washington University Medical School	(1901)		Iowa
Creighton Medical College	(1896), (1907), (1910),	(1923)	Nebraska
Lincoln Medical College	(1911)		Nebraska

University of Nebraska	(1921), (1923)	Nebraska
Columbia University	(1921)	New York
University of Buffalo	(1917)	New York
University of the City of New York	(1880)	Minnesota
Cincinnati College of Medicine and Surgery	(1875)	Colorado
Medical College of Ohio	(1907)	Ohio
University of Oregon	(1909)	Oregon
Jefferson Medical College	(1907)	Penna.
Woman's Medical College of Pennsylvania	(1903)	Mass.
Meharry Medical College	(1916)	Illinois
Memphis Hospital Medical College	(1895)	Louisiana
Vanderbilt University	(1897)	Alabama, (1922) Tennessee
Baylor University	(1919)	Texas
University of Berlin, Germany	(1919)	Wyoming
Nagasaki Special Medical School, Japan	(1922)*	Nevada

ENDORSEMENT OF CREDENTIALS

College	Year Grad.	Endorsement with
University of Tomsk, Siberia, Russia	(1901)	Philip. Isl.

* Graduation not verified.

Book Notices

ANGINA PECTORIS. By Sir James Mackenzie, M.D., F.R.S., F.R.C.P., Director, St. Andrews Institute for Clinical Research. Cloth. Price, $9. Pp. 253, with 77 illustrations. New York: Oxford University Press, 1924.

Mackenzie's views on angina pectoris are well known to most readers. In this work they are restated and elaborated at length. Briefly, he believes that the complex of symptoms called angina pectoris is due to the contraction of heart muscle: an unduly strong contraction, a contraction when the blood supply is insufficient, or one when the muscle is exhausted. His theory is, in reality, a modified coronary artery theory. What he calls secondary angina pectoris, the pseudo-angina of many older writers, is due to a hypersensitive state of the nervous system and not to any organic disease in the heart as is his primary angina, the form often spoken of as true angina. There is a pleasing, broadly philosophical tone to the work, which is concerned not so much with trivial details as with a study of fundamentals, such as the importance of symptoms, the mechanism and significance of pain, the nature of reflexes, and the part played by the autonomic nervous system. There is frequent appeal for illustration or proof to the author's actual experience, as shown by the records of 160 cases that are given in the appendix, which takes up about 100 pages. Some of these records are meager, others quite full and with necropsy findings. Altogether, they furnish evidence of how valuable may be the observations of the busy general practitioner, if he will but commit to writing the facts that he sees from day to day and year to year as he comes in contact with illness in his capacity of family physician. The work is in no sense a textbook for the student or the physician who may desire a comprehensive statement of present-day knowledge of angina pectoris. It is distinctly limited to the consideration of Mackenzie's own views and the arguments in their favor. There is little or no reference to the views or work of others. Sir Clifford Allbutt's name is not mentioned, nor is the aortic theory of the pain in angina considered. These omissions are consciously made, as is stated in the preface; but they rob the volume of its value as a textbook or a book of reference. It seems to us, also, that these omissions weaken somewhat the force of Mackenzie's logic and argumentation. At times one wonders whether the writer is omitting because he deems it wise or because he does not know. One familiar with Mackenzie's writings finds the old characteristic fling at the hospital, laboratory and research, the exaltation of the work of the general practitioner, the oft repeated statement that up to a few years ago the medical world was helplessly, aimlessly and ignorantly groping in the dark until Mackenzie came to light the way. It is a pleasure to note, however, that the tone seems less strident and scolding, less arrogant and magisterial than of old. Age has perhaps had a mellowing effect on the author. One can read this book with less of irritation and indignation than some of the others in which the extravagant statements and the unjust strictures often made the reader indignant and blinded him to the real merits of the volume. This book is stimulating; it is interesting; it contains many keen observations, many illuminating paragraphs. It is well worth reading by one desiring to know the views of one of the important figures in modern British medicine. It is well gotten up, and has many helpful illustrations. The English is occasionally a little peculiar, but in general the style is straight forward and makes easy reading.

DIE BIOGENEN AMINE UND IHRE BEDEUTUNG FÜR DIE PHYSIOLOGIE UND PATHOLOGIE DES PFLANZLICHEN UND TIERISCHEN STOFFWECHSELS. Monographien aus dem Gesamtgebiet der Physiologie der Pflanzen und der Tiere. 3. Band. Von M. Guggenheim. Second edition. Paper. Price, $4.80. Pp. 474. Berlin: Julius Springer, 1924.

This volume is one of the series of the German monographs on physiology and biochemistry, the first of which, the hydrogen-ion concentration by Leonor Michaelis, has become almost a classic. The subject matter dealt with in Guggenheim's book is about the same as that contained in Barger's "Simpler Natural Bases," one of the monographs on biochemistry published in England, written by English and American investigators. Barger's excellent book appeared ten years ago and no new edition has been published, but the English biochemist read and corrected the German work of his Swiss colleague, who had the great misfortune of losing his eyesight completely through an accident in the laboratory. In this way Guggenheim's work contains at the same time the views and ideas of Barger, a circumstance that materially enhances its value. The name "biogene" amins is used in preference to "proteinogenous" amins, frequently employed, since the relation to the nitrogenous products of the protein molecule is not established in all cases. The work consists of ten parts. A general one discusses the origin and occurrence of the amins in the plant and animal world; their relation to bacterial life and putrefaction; their rôle in pathology; their general chemical behavior, and methods for their separation and isolation. The nine parts following take up the alkylamins (e. g., methylamin); alkanolamins (e. g., cholin and muscarin); the diamins (e. g., putrescin and cadaverin); the guanidin compounds, such as arginin, creatin and creatinin; the imidazol compounds (e. g., histidin and histamin); further, the betains and ω-amino acids. Under the heading phenylalkylamins, tyramin and epinephrin are discussed. The last chapter, on amins of unknown constitution, considers the active principles of the hypophysis and of the thyroid. The occurrence and mode of production in nature, mode of chemical formation in the laboratory, biochemical behavior, pharmacologic action, chemical properties, chemical isolation and chemical determination of every compound as far as known is discussed in detail, with due consideration of the most recent publications. The work differs from many continental publications by the truly international consideration of the subject matter. Not less than 111 pages are devoted to the bibliography. And yet the book is not just a compilation of the facts known regarding these basic substances, for the author has himself contributed considerable original work on the amins, and his discussion shows everywhere good critical judgment. For instance, Guggenheim believes that thyroxin is the active principle of the thyroid gland, but he does not accept the constitution and formula attributed to it by its discoverer on the basis of the evidence at hand. The biochemist, physiologist, pharmacologist and bacteriologist alike will obtain in the book a valuable aid in their work. The physician will find a lucid discussion and answer to many questions that he meets frequently in his reading and his studies.

A MANUAL OF DISEASES OF THE NOSE, THROAT AND EAR. By E. B. Gleason, M.D., LL.D., Professor of Otology, Medico-Chirurgical College Graduate School, University of Pennsylvania. Fifth edition. Cloth. Price, $4 net. Pp. 660, with 212 illustrations. Philadelphia: W. B. Saunders Company, 1924.

The revision for this edition has entailed the omission of older procedures and the addition of new methods of treatment. The net result is somewhat longer than the previous edition, although it does not depart from the aim to present the subject simply for the medical student and general practitioner. The book embraces methods of examination, descriptions and illustrations of instruments, technic for the use of applications and the performance of minor operations. The section of formulas is revised, especially the consideration of

local anesthetics and biologic products. The report of the Committee on Local Anesthetics of the American Medical Association has guided the rewritting of this subject.

A DESCRIPTIVE ATLAS OF RADIOGRAPHS OF THE BONES AND JOINTS. For Students and Practitioners. By A. P. Bertwistle, M.B., Ch.B., Resident Surgical Officer, General Infirmary, at Leeds. Cloth. Price, $5. Pp. 198, with 300 illustrations. New York: William Wood & Co., 1924.

This presents a large series of reproductions of roentgenograms of normal and pathologic bones and joints; also a number of traumatic lesions of the skeletal structures and some congenital variations. The various lesions are presented in clear detail, and it is evident that the author has used originals of the highest technical quality. The several divisions of the subject are presented in such a manner as to provide a reference for comparative study, and a large variety of lesions are shown. The author has selected typical examples, and appears to have avoided borderline cases over which there might be a difference of opinion, even among the more experienced in roentgen-ray interpretation. The explanations that accompany each case are, in general, very satisfactory, and the roentgen-ray student will find much instructive material in this work.

Medicolegal

When Liability of Employer for Medical Treatment Begins

(Millspaugh & Irish Co. v. Lunte (Ind.), 144 N. E. R. 147)

The Appellate Court of Indiana, Division No. 2, says that the workmen's compensation law of that state, as originally enacted, imposed on an employer the absolute duty to furnish to an injured employee such medical and surgical treatment and hospital service as might be necessary during the first thirty days after the injury. An amendment of 1919 confers on the industrial board the power to require an employer to furnish treatment for an additional period, not exceeding thirty days, if in the judgment of the board a recovery probably will be accelerated thereby. May 14, 1923, plaintiff Lunte, while in the employ of the defendant company and engaged in heavy lifting, suddenly experienced severe pain in his abdomen. A physician whom he consulted found a swelling but was unable to determine the precise nature of the ailment. He was inclined to the opinion that his patient was suffering from a swollen gland. Not until July 12 could the injury, which was a right femoral hernia, be definitely diagnosed, and then the plaintiff was taken to a hospital, where he was operated on for the injury, and incurred a hospital bill of $45.15 in the treatment of his injury.

The company denied the power of the industrial board to order it to reimburse the plaintiff for the $45.15, which he had paid. It contended that the law contemplated that the board should determine in advance whether or not it would require an employer to furnish treatment beyond the first thirty-day period, and that the board had no authority to include in its award the cost of the hospital service, for the reason that the service was rendered after the first thirty-day period, and no order requiring the employer to furnish that service had previously been made. The contention rested on the assumption that the hospital service was furnished after the first thirty-day period. Was the assumption valid? Had the plaintiff been injured by some external and violent means, some mishap in his environment, and if the nature of his injury had been such as that it was visible and open to observation, or readily ascertainable by a surgeon at the time it occurred, there would have been no difficulty in determining the right of the employee and the duty of the employer with respect to medical and surgical treatment. In that class of cases the treatment period begins at the time the injury is inflicted. But the plaintiff's injury was not one of that class.

The truth was that the period from the day on which the plaintiff's injury occurred until its nature could be ascertained with reasonable certainty was one of suspense. During that period the right of the employee and the duty of the employer with respect to treatment were suspended, for it would have been impossible to determine the question of right and duty, as legal proof could not be adduced. Finally, July 12, the surgeons established beyond controversy that the ailment was a femoral hernia. That fact having been established, it then became possible to establish by legal proof that the plaintiff's injury was due to his employment. Thereupon it became the duty of the employer to furnish treatment. Then, and not until then, did the treatment period begin. It followed that the hospital expense was incurred during the first thirty-day period, and that the employer's liability for the payment thereof was absolute.

Testimony by Patient Not Waiver of Privilege

(Polin v. St. Paul Union Depot Co. et al. (Minn.), 199 N. W. R. 87)

The Supreme Court of Minnesota, in affirming an order which, after a verdict for the plaintiff, denied the defendants' motion for a judgment or a new trial, says that the plaintiff had sustained a Potts fracture of the ankle. He testified as to his injuries. He testified also that the surgeon of the railway company, who treated him for his injuries, gave him gas and set the broken bones; that his leg was placed in a plaster cast; that some weeks later this cast was removed and a smaller one substituted; that some weeks later the smaller cast was removed; and that a few times thereafter he went to the surgeon, who examined his leg but did nothing further. There was no contention that the treatment was either improper or unskilful. The surgeon and another physician made an examination of the plaintiff at the trial. The other physician testified as an expert concerning the plaintiff's condition as the result of his injuries. The surgeon frankly admitted that he would be unable to testify as to the plaintiff's condition from the information obtained at this examination, disassociated from the information obtained while treating the plaintiff as a patient, and his testimony was excluded. The defendants contended that it was error to exclude the testimony of the surgeon, but the supreme court sees no error in the ruling.

Section 8375 of the General Statutes of Minnesota of 1913 forbids a physician or surgeon from disclosing, without the consent of his patient, any information which he acquired while acting in his professional capacity, and which was necessary to enable him to act in that capacity. The defendants insisted that the plaintiff waived the right to invoke that statute by bringing an action to recover damages for the injuries treated by the surgeon, and by testifying concerning such injuries and the treatment given. The legislature of Minnesota has not seen fit to say that such acts shall operate as a waiver. The authorities are not in harmony. This court, in accordance with the weight of authority, has adopted the rule that bringing an action (unless it be against the physician himself for malpractice), or testifying concerning the injuries sustained and the treatment received (unless such testimony relates to communications made to the physician or questions the propriety of his treatment), is not a waiver of the privilege.

Society Proceedings

COMING MEETINGS

American Pathological Society, Washington, D. C., Dec. 29-31. Dr. E. B. Krumbhaar, Chestnut Hill, Philadelphia, Secretary.

American Pharmacological Society, Washington, D. C., Dec. 29-31. Dr. E. D. Brown, University of Minnesota, Minneapolis, Secretary.

American Physiological Society, Washington, D. C., Dec. 30-Jan. 1. Dr. Charles W. Greene, University of Missouri, Columbia, Mo., Secretary.

American Society of Biological Chemistry, Washington, D. C., Dec. 29-31. Dr. Victor C. Myers, New York Post-Graduate Medical School, New York, Secretary.

Federation of American Societies for Experimental Biology, Washington, D. C., Dec. 29-31. Dr. E. B. Krumbhaar, Chestnut Hill, Philadelphia, Secretary.

Philippine Islands Medical Association, Manila, Dec. 18-20. Dr. I. Concepcion, College of Medicine and Surgery, Manila, Secretary.

Porto Rico, Medical Association of, San Juan, Dec. 13-14. Dr. Ramon M. Suarez, Santurce, Secretary.

Society of American Bacteriologists, Washington, D. C., Dec. 29-31. Dr. J. M. Sherman, Dairy Industry Building, Ithaca, N. Y., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Gynecology, St. Louis

8: 385-533 (Oct.) 1924

*Hyperplasia of Endometrium. E. Novak, Baltimore, and K. H. Martzloff, Portland, Ore.—p. 385.
*Effects of Radium Therapy in Cases of Large Uterine Fibroids. C. F. Burnam, Baltimore.—p. 411.
Ethylene and Oxygen Anesthesia for Gynecologic and Obstetric Work. N. S. Heaney, Chicago.—p. 416.
Mental Diseases Associated with Childbearing. M. S. Gregory, New York.—p. 420.
Chorio-Angiofibroma (Chorio-Angioma). R. S. Siddall, Detroit.—p. 430.
*Pregnancy Glycosuria with Hyperglycemia. S. B. Schenck, Brooklyn.—p. 457.
Early Carcinoma of Cervix. E. S. L'Esperance, New York.—p. 461.
*Status of Rectal Examinations in Labor. R. A. Reis, Chicago.—p. 475.
Rôle of Internist in Obstetric Hospital. W. W. Herrick, New York.—p. 479.
*Case of Pernicious Vomiting of Pregnancy with Low Blood Chlorids and Marked Response to Sodium Chlorid Therapy. R. L. Haden and D. C. Guffey, Kansas City, Kan.—p. 486.
Cure of Incontinence of Urine in Women. C. J. Miller, New Orleans.—p. 492.
Two-Way Treatment Catheter. W. H. Cary, Brooklyn.—p. 495.
Exstrophy of Bladder with Marked Separation of Pubic Bones. E. C. Sage, Omaha.—p. 497.
Pregnancy in Double Uterus Terminated by Hysterotomy. W. P. Guy, Los Angeles.—p. 500.

Hyperplasia of Endometrium.—The study made by Novak and Martzloff comprises sixty-six cases of hyperplasia of the uterine endometrium. In thirty-two cases hysterectomy was performed and in the other thirty-four cases the pathologic material consisted of uterine curettings. This study shows no definite abnormality in the menstrual history of these patients prior to the onset of the symptoms of hyperplasia. With the onset of these symptoms there was, however, in almost every case, excessive menstruation, manifested usually by an increase in both the amount and duration of the menstrual discharge. Menorrhagia or metrorrhagia may occur as symptoms of hyperplasia, the former being the more common of the two. The passage of blood clots is not unusual. Amenorrhea, as part of the symptom complex of hyperplasia, was noted in about one sixth of the cases. Pregnancy occurring after the onset of hyperplasia is uncommon but did occur in two patients. About one half of the patients had had one or more full term pregnancies prior to the onset of the symptoms which are associated with hyperplasia.

Effect of Radium on Uterine Fibroids.—Burnam asserts that more than 50 per cent. of large uterine fibroids can be made to disappear completely by appropriate radium radiation, at practically no risk to the patient, with very little discomfort, and with little loss of time from the ordinary duties of life, and without in any way complicating operative procedures, should they be necessary later.

Pregnancy Glycosuria with Hyperglycemia.—According to Schenck, in addition to the renal glycosuria and intermittent glycosuria of Wallis and Bose, the only two conditions that have been described as glycosuria occurring in the pregnant woman, exclusive of true diabetes and alimentary glycosuria, another type exists that has not previously been described, pregnancy glycosuria with hyperglycemia, both the glycosuria and hyperglycemia disappearing after delivery. This condition may be due to disturbed function of the thyroid or other endocrine glands during pregnancy but Schenck believes that it is a prediabetic condition.

Rectal Examinations in Labor.—Reis presents a survey of the literature and an analysis of 1,000 cases.

Sodium Chlorid Therapy of Vomiting of Pregnancy.—A chemical study of a severe case of vomiting of pregnancy is reported by Haden and Guffey. The blood showed an increase in nonprotein nitrogen, urea nitrogen, uric acid, and carbon dioxid combining power and a very low chlorid content. The urine was high in nitrogen, low in chlorids, and contained albumin and casts. The subcutaneous administration of sodium chlorid in large amounts was followed by an immediate cessation of toxic symptoms and a return of the blood and urine to normal. The findings suggest that some at least of the toxemias of pregnancy are similar to the toxemia of intestinal obstruction. In such cases sodium chlorid acts in a specific neutralizing, antitoxic or protective capacity.

American Journal of Public Health, Detroit

14: 819-916 (Oct.) 1924

The Fly in the Ointment. W. S. Rankin.—p. 819.
"Artesian Well" as a Potential Source of Danger. C. N. Leach, Manila, P. I., and F. D. Leach.—p. 827.
Outlook for International Vital Statistics. E. Sydenstricker, Washington, D. C.—p. 832.
Survey of Two Hundred and One Privies for Intestinal Parasites. W. C. Boeck, Boston.—p. 839.
Prevalence and Control of Disease. C. A. Harper, Madison, Wis.—p. 842.
Offensive Tastes in Public Water Supplies. C. F. Dalton, Burlington, Vt.—p. 845.
*Milk Borne Epidemic of Typhoid Traced to Urinary Carrier. H. J. Sears, R. W. Garhart and D. W. Mack, Portland, Ore.—p. 848.
*Is Routine Prophylactic Use of Diphtheria Antitoxin Justified? A. P. Hitchens, Washington, D. C.—p. 855.
Improvement of Sanitary Personnel. N. Sinai, Ann Arbor, Mich.—p. 866.

Milk-Borne Epidemic of Typhoid Traced to Urinary Carrier.—The main facts brought out by Sears, Garhart and Mack about the epidemic in the foregoing study are: twenty-six cases of typhoid with five deaths resulted from the drinking of the unpasteurized milk of a dairy serving not less than 800 persons. The outbreak showed the high incidence among women and children characteristic of milk-borne typhoid, but was not explosive in type, and the mortality was somewhat higher than is usually experienced. The origin of the infection was traced to a milker at the dairy who was shown to have a seminal vesiculitis due to *B. typhosus*, and was as a consequence excreting this organism in enormous numbers in his urine. The organism was never isolated from his stools. Treatment of the vesiculitis by massage and administration of hexamethylenamin greatly reduced the number of typhoid bacilli in the urine of the carrier, but did not wholly rid him of the infection. He remains a carrier. The epidemic was brought to an end even before the detection and removal of the carrier, by ordinary commercial pasteurization of the milk. Evidence is adduced of an unusually long incubation period in four cases of typhoid, three of which had their onset twenty-two days, and one twenty-seven days after the last delivery of raw milk at the homes of the patients.

Is Routine Use of Diphtheria Antitoxin Justified?—A discussion of the use of diphtheria antitoxin for prophylactic purposes indicates that the field for this remedy is a narrow one. Hitchens says that diphtheria antitoxin is so perfect a therapeutic agent that it is safe to wait until the disease has manifested itself, except possibly in the case of certain young children, provided those who have been in dangerous contact with the disease are meanwhile under careful observation. Diphtheria antitoxin is not a substance which should be administered in a routine manner or when there is not a clear indication for its use. Its administration may be followed by immediate or remote consequences of a disagreeable and possibly of an alarming or dangerous nature. Through masking the freshly produced carrier state among contacts the routine use of antitoxic prophylaxis without subsequent cultural studies might be a potent factor in maintaining the prevalence of diphtheria. Active immunization, on the other hand, is full of promise and the occurrence of a case of diphtheria provides the strongest possible argument for the extension of its application. Convalescent and contact carriers should be kept in isolation until two consecutive cultures taken at about three day intervals from both nose and throat fail to reveal the presence of virulent diphtheria bacilli.

American Journal of Roentgenology and Radium Therapy, New York

12: 301-402 (Oct.) 1924

*Experiences in Permanence of Radiologic Cure in Cancer. G. Forssell, Stockholm, Sweden.—p. 301.
*Calcification in Heart and Pericardium. E. C. Cutler and M. C. Sosman, Boston.—p. 312.
Roentgenologic Evidence of Mitral Disease. J. Ferber, New York City.—p. 321.
*Ulcerative Pulmonary Tuberculosis in Infants. H. L. Farmer, Cleveland.—p. 327.
*Multiple Myeloma. Case. S. B. Whitlock, Norfolk, Va.—p. 331.
Osteochondritis Deformans Juvenilis—Legg's Disease—with Osteomyelitis of Acetabulum Probably Tuberculous. S. C. Davidson, Rochester, N. Y.—p. 335.
Radium Treatment of Fibromas of Nasopharynx: Thirty-Two Cases. G. B. New and F. A. Figi, Rochester, Minn.—p. 340.
*Treatment of Diphtheria Carriers by Roentgen-Ray Irradiation. D. Kahn, Toledo, Ohio.—p. 343.
Radiologic Treatment of Malignant Diseases in Mouth. G. W. Grier, Pittsburgh.—p. 347.
Intraperitoneal Insertion of Buried Capillary Glass Tubes of Radium Emanation in Carcinoma of Cervix Uteri. I. Levin, New York City.—p. 352.
Radiation Treatment of Nonmalignant Uterine Conditions. G. F. Thomas and W. C. Hill, Cleveland.—p. 357.
Lateral Roentgenography of Lumbosacral Region. L. T. Lewald, New York City.—p. 362.
*Clinical Results After Radium and Roentgen-Ray Irradiation of Cancer of Cervix Uteri. B. F. Schreiner, Buffalo, N. Y.—p. 367.
Radiation in Treatment of Carcinoma of Uterus. E. C. Samuel and E. R. Bowie, New Orleans.—p. 370.
Massive Dose Radium Treatment in Carcinoma of Cervix Uteri. G. A. Leland, Boston.—p. 373.
Radium Treatment of Inoperable Cancer of Pelvis. A. Soiland, Los Angeles.—p. 378.

Permanence of Radiologic Cure in Cancer.—In Forssell's opinion, radiotherapy is to be applied only in those cases in which it is obviously superior to surgery. In doubtful cases, the individual conditions must decide the matter. In inoperable cases, radiotherapy is indicated, if previous experience makes a cure or a material improvement probable. If this be not the case, radiotherapy should not be employed, even in inoperable cases. When radiotherapy can secure a permanent cure in inoperable cases, it is generally not the size of the growth but its topographical situation which prevents operation—for instance, when in the pharynx, the thyroid, or the parametrium. In certain operable cases a bad general condition is the indication for irradiation. In some inoperable cases in which radiotherapy alone cannot be relied on, this therapy may be employed to change the tumor into an operable one, and then an operation can be performed successfully. The point, however, is to do the operation at the right time. In operable cases, radiotherapy can be considered only when it will yield a materially better result than will surgery.

Calcification of Heart and Pericardium.—Four cases are reported by Cutler and Sosman in which there were calcium deposits in the heart and pericardium. The etiologic factor was without doubt rheumatic fever in one case and tuberculosis in another. The condition found in the remaining two may have been caused by an antecedent pericarditis.

Ulcerative Pulmonary Tuberculosis in Infants.—Farmer reports seven cases of ulcerative pulmonary tuberculosis in children under 2 years of age. Five out of this number were verified by necropsy. The only method of diagnosis is by roentgenography. It seems that the incidence of tuberculous ulceration is higher in the colored race.

Multiple Myeloma.—The lesions in Whitlock's case were present in the cranial bones, vertebral column, ribs, pelvis, clavicle, humerus, scapula, radius, carpus, metacarpals, femur, tibia, fibula, calcaneus and astragalus. Pathologic fractures were shown in the clavicle, femur, and four ribs of the right side. Marked distortion and rarefaction is shown in the vertebrae and pelvis. The case is unusual from both clinical and roentgenologic standpoints, as the literature on this condition refers to the lesions being found in the various bones at "autopsy" but seldom mentions demonstrating multiple myeloma in so extensive involvement and in all stages in a single living subject.

Treatment of Diphtheria Carriers by Roentgen-Ray.—Data are presented by Kahn which show that 152 of 185 cases of carriers treated by roentgen-ray irradiation have tended to remain free from virulent diphtheria organisms, as determined by reculture, after an interval of ninety days. In a second series of twenty-three cases, negative cultures were obtained after one or, at most, two roentgen-ray treatments. Complete histories are given of three additional cases that were true carriers, which cleared up after roentgen-ray treatment, other measures having failed. The technic recommended for treating diphtheria carriers is described.

Results of Radiologic Treatment of Cervix Cancer.—An analysis made by Schreiner of 416 cases shows that the results in the treatment of cancer of the cervix in the so-called operable class, are as good or better than the surgical treatment. In farther advanced cases (inoperable) the results have surpassed what could be expected by surgical treatment.

American Journal of Syphilis, St. Louis

8: 609-830 (Oct.) 1924

*Prevention of Cardiovascular Syphilis. W. D. Reid, Boston.—p. 609.
*Syphilis of Prostate. A. C. Starry, Sioux City, Iowa.—p. 615.
*Syphilis. XV. Excretion of Arsenic Through Kidney After Intravenous Administration of Arsphenamin, Neo-Arsphenamin, Silver Arsphenamin and Tryparsamide. J. A. Fordyce, I. Rosen and C. N. Myers, New York.—p. 619.
*II. Retention and Elimination of Silver with Special Reference to Silver Arsphenamin and Silver Therapy. C. N. Myers and H. B. Corbitt, Brooklyn.—p. 704
*Neurosyphilis. L. H. Cornwall and C. N. Myers, New York.—p. 726.
Late Syphilitic Lesions of Leg. D. W. Montgomery and G. D. Culver, San Francisco.—p. 734.
Priapism from Cord Lesion Presumably Syphilitic. P. G. Smith and C. E. Kiely, Cincinnati.—p. 738.
Mechanism of Wassermann Reaction. I. W. L. Hardesty, St. Louis.—p. 744.
*Id. II. W. L. Hardesty, St. Louis.—p. 760.
*Provocative Kolmer Complement Fixation Test for Syphilis. S. S. Greenbaum and C. S. Wright, Philadelphia.
Epidemiologic Approach to Control of Syphilis and Gonorrhea. R. S. Patterson, Trenton, N. J.—p. 787.

Prevention of Cardiovascular Syphilis.—The prevention of cardiovascular syphilis, Reid says, is primarily that of syphilis. After the latter infection has been acquired, efforts should be directed toward the prevention of serious damage to the heart and aorta. This requires diagnosis of the condition at an early stage and the institution of adequate treatment. Reid suggests the use of a terminology which clearly indicates the syphilitic origin of the disease.

Syphilis of Prostate.—Starry reports a case of syphilis of the prostate, in which typical syphilitic lesions were found in the prostate gland, associated with the presence of spirochetes of syphilis in the lesions.

Excretion of Arsenic Through Kidney.—The data presented by Fordyce et al. show conclusively that there is a distinct connection between chemical constitution and physiologic action as well as a relation between the two routes of excretion. These two types of drugs clinically parallel the phenolsulphonephthalein test for kidney function and the phenoltetrachlorphthalein test for liver function. The experiments also show that there is a relationship between the late arsenical reactions and the failure to excrete.

Elimination of Silver Arsphenamin.—Examination of the results obtained by Myers and Corbitt by the repeated injection of silver arsphenamin in rabbits shows that more than 90 per cent. of the silver injected is excreted in a period of seven days after the last injection. This occurs even with massive doses, twenty times those used clinically. When nearly clinical doses are used, the excretion is almost complete.

Neurosyphilis: Arsenic Therapy.—Experiments made by Cornwall and Myers suggest that slightly more arsenic penetrates the spinal cord than the brain. These results add weight to the opinion that the direct addition of arsenic to the spinal fluid has a justifiable basis. It increases the arsenic in the fluid where its spirochetal action may operate for at least ninety-six hours following administration. Arsenic remains in the spinal fluid for a much longer period but the authors are not prepared at present to state the maximum time that it may remain there.

Nature of Wassermann Reaction.—The Wassermann reaction is conceived by Hardesty as a phenomenon depending on

a quantitative upset in the normal interrelations between highly specialized static cells and their circulating fluids, in which the former, suffering most in zoonic invasion and anaphylactic injury, throw on motile, more primordial cells and fluids the two-fold burden of resistance and of their own cytopathology.

Provocative Kolmer Test for Syphilis.—Greenbaum and Wright are of the opinion that the adoption of Kolmer's standardized complement-fixation test for syphilis removes an important criticism against the use of the provocative test.

Annals of Clinical Medicine, Baltimore

3: 255-369 (Oct.) 1924

*Vital Capacity: Value as Diagnostic Procedure. J. H. Arnett and K. Kornblum, Philadelphia.—p. 255.
*Incidence and Inheritance of Goiter in St. Louis and Chicago. B. Lloyd, Chicago.—p. 275.
*Serologic Reactions in Syphilis. H. L. Keim, Ann Arbor, Mich.—p. 292.
*Purpura Hemorrhagica. W. F. Hamilton and T. R. Waugh, Montreal, Quebec.—p. 298.
Generalized Angioneurotic Edema Following Tonsillectomy. E. C. Robichaux, Excelsior Springs, Mo.—p. 308.
*Case of Auricular Fibrillation Occurring During Administration of Thyroid Substance. J. M. Swan, New York.—p. 311.
Anxiety Neurosis Element in Diagnosis of Heart Disease. L. F. Bishop, New York.—p. 324.
*Ball Thrombi of Heart. J. L. Abramson, Ann Arbor, Mich.—p. 327.

Vital Capacity Standards Not of Diagnostic Value.—Personal experience has led Arnett and Kornblum to believe that vital capacity standards are incapable of clearly differentiating normal persons from those with early heart disease or pulmonary tuberculosis. In the more advanced cases the differentiation increases, but by this time definite physical signs are usually present. The procedure thus affords little aid in those cases in which the diagnosis is most difficult. In cases of pneumonia, the spirometer is of use (*a*) as an adjunct in visualizing the course of the disease; (*b*) after the crisis, a failure of the vital capacity to increase rapidly and steadily may point toward a complication, while the presence of such an increase argues against the latter; (*c*) frequent accurate vital capacity readings before and after operation for empyema are apparently valuable in indicating the success or failure of the operation, and (*d*) an extremely low vital capacity may assist in differentiating pneumonia from diseases which do not lead to such a marked reduction.

Incidence and Inheritance of Goiter in St. Louis and Chicago.—Health records obtained from many sources were surveyed by Lloyd. While the estimated incidence of goiter in Chicago is fifty-two in 1,000 and thirty in 1,000 in St. Louis, the proportion of deaths due to goiter to deaths from other causes was six times greater in St. Louis than in Chicago. A study of family histories for as many as four generations showed the familial tendency to the disease to be most noticeable in the second and third generation, which were equally affected, in the cases from St. Louis, and a gradual increase in the number of affected individuals from the first to the third generations in the cases from Chicago. The recorded family histories from St. Louis showed 20 per cent. of the children of goitrous mothers were affected. Similar data from Chicago showed that 46 per cent. of the children of affected parents were goitrous. No cretins were reported. Tonsillitis or seasonal sore throat accompanied goiter symptoms in 40.8 per cent. of the cases.

Value of Serologic Reactions in Syphilis.—Keim is of the opinion that one of the fundamental errors which has occurred in conjunction with the use of serologic tests in cases of syphilis has been their employment as an absolute guide to therapeusis. The degree of positiveness of a reaction cannot then be an absolute index for the amount of treatment necessary.

Purpura Hemorrhagica; Thrombopenia.—Hamilton and Waugh cite the cases of three girls, aged from 15 to 20, who, while never specially robust, showed at about puberty the tendency to bleed spontaneously into the skin and from mucous membrane, nose, mouth, uterus and digestive tract. The bleeding was greatly increased in two of the patients at the time of menstruation; slight pressure to the skin was followed by signs of bruising. While a few spots had been seen on the skin and an occasional slight nose bleed had been present in two cases, yet it seemed that there was in these patients a rapid change from comparative health to illness of a severe degree. Diarrhea with much blood in the stools in one case, excessive bleeding at the nose and moderate menorrhagia in another, while in the third case nasal and uterine bleeding seemed to account for this rapid change. Retinal hemorrhages were common to the group. While the clinical signs are characteristic of purpura hemorrhagica, yet on the morphology of the blood mainly depends the diagnosis—that of essential thrombopenia or thrombocytopenia. A careful study was made of the blood cells and the findings are discussed. The authors incline to the view that in the true essential thrombopenia there is present a constitutional angiopathy, with which or possibly as a result of which there occurs a dyscrasic myelopathy, characterized particularly by thrombopenia.

Thyroid Substance Causes Auricular Fibrillation.—Swan records the history of a patient with myxedema who has been under observation for eleven years. While he was under treatment with glandulae thyroideae siccae, U. S. P., he developed an attack of auricular fibrillation which stopped on the withdrawal of the thyroid substance, reappeared on the renewal of treatment with thyroid substance, and disappeared again when the medication was discontinued.

Ball Thrombi of Heart.—Nineteen cases of ball thrombi of the heart are collected from the literature, by Abramson and one new case is added. The thrombus in this case was lying free in the left auricular cavity just above the mitral orifice. Abramson points out that symptoms of mitral stenosis, associated with gangrene of the lower extremities, evidence of embolic processes, or atypical peripheral manifestations should lead one to suspect this condition.

Annals of Surgery, Philadelphia

80: 481-640 (Oct.) 1924

*Effect of Pressure on Articular Surfaces in Pyogenic and Tuberculous Arthritides: Bearing on Treatment. D. B. Phemister, Chicago.—p. 481.
Enterostomy: Therapeutic and Diagnostic Measure. M. F. Porter, Fort Wayne, Ind.—p. 501.
Intra-Abdominal Rupture of Intestine Following Strangulated Femoral Hernia. F. L. Hupp, Wheeling, W. Va.—p. 504.
*Additional Posterior Incision in Certain Cases of Operation for Inflamed Retrocecal Appendix. W. Meyer, New York.—p. 511.
*Infection of Permanent Hydronephroses. V. C. David and E. C. McGill, Chicago.—p. 519.
*Fate of Fractured Carpal Navicular. K. Speed, Chicago.—p. 532.
*Regeneration of Meninges. M. Lear and S. C. Harvey, New Haven, Conn.—p. 536.
*Toxicity and Rate of Excretion of Calcium Chlorid from Blood Stream. J. P. Bowler and W. Walters, Rochester, Minn.—p. 545.
*Cancer of Thyroid. J. L. DeCourcy, Cincinnati.—p. 551.
*Resuscitation by Direct Massage of Heart in Cardiac Arrest. W. E. Lee and T. M. Downs, Philadelphia.—p. 555.
*Late Results of Splenectomy for Traumatic Rupture of Spleen. D. B. Pfeiffer and C. M. Smyth, Philadelphia.—p. 562.
*Malignant Tumors of Kidney in Children. F. Hinman and A. A. Kutzman, San Francisco.—p. 569.
*Papillary Epithelioma of Kidney Pelvis. W. M. Jones and G. L. Carroll, St. Louis.—p. 591.
*Squamous Cell Tumors of Renal Pelvis. A. J. Scholl and G. S. Foulds, Rochester, Minn.—p. 594.
*Surgical Trauma of Recurrent Laryngeal Nerve with Restoration of Function. A. S. Taylor, Peking, China.—p. 606.

Effect of Pressure on Joint Surfaces in Infectious Arthritis.—Phemister says that in pyogenic arthritis articular cartilage is killed and broken down first at the points of contact and pressure of opposing articular surfaces. In tuberculous arthritis articular cartilage is not killed first but is protected at the points of contact and pressure of opposing articular surfaces. It usually disappears last in the regions of contact and greatest pressure in the joint. Proteolytic ferments, derived largely from polymorphonuclear leukocytes, assist greatly in the rapid removal of necrotic cartilage in pyogenic arthritis. Proteolytic ferments are absent in tuberculous arthritis, and masses of dead cartilage may persist for months or years, showing few signs of progressive destruction. In pyogenic arthritis the infection rarely invades secondarily the deeper portions of the bone at the points of pressure. In tuberculous arthritis invasion of the bone at the points of pressure is of common occurrence after the articular cartilage has been largely or wholly destroyed. Weight extension should be applied during the active period of pyogenic arthritis to lessen the amount of invasion and

destruction of articular surfaces at the points of contact and pressure. On the other hand, it would appear that extension for preventing the destruction of articular cartilage in tuberculous arthritis is not indicated. But when articular cartilage has already been destroyed, extension should lessen the tendency to erosion or invasion with sequestration of bone at the points of greatest pressure in the joint.

Incision to Expose Retrocecal Appendix.—Meyer believes in exposing the appendix freely when it is to be removed; therefore in cases of so-called retrocecal appendix, when the appendix is tied down and cannot be brought into view by any kind of manipulation, he makes a posterior incision which exposes the retrocecal and retrocolonic space.

Infection of Hydronephroses Through Blood Stream.—The possibility of a developing hydronephrosis in man becoming infected from organisms reaching the blood stream from the bowel was made the subject of an experimental study by David and McGill. They found that closed hydronephroses in dogs may be infected through the blood stream up to three months after the onset of their development. Closed hydronephroses of more than three months' standing are no longer liable to infect through the blood stream. Closed hydronephroses are rarely, if ever, infected through the lymphatics leading from the bowel to the kidney. Ascending ureteral lymphatic infection of hydronephroses is possible but improbable.

Treatment of Fractured Navicular.—Speed advises immediate and prolonged splinting of the fractured and undislocated navicular bone. If dislocation of the fragment has occurred, operative removal is indicated. In all fractures unrecognized more than a few days, operative removal of the whole bone promises the quickest return of function in the hand and wrist.

Regeneration of Meninges.—As a result of their experiments, Lear and Harvey found that when there is an injury to the pia-arachnoid and cortex, even though the overlying dura is uninjured, dense adhesions between all three layers of the meninges and the cortex are formed. The longer the period of healing, the greater the density of the adhesions and even after five weeks there is no attempt at solution of the adhesions. The lining cells of the pia-arachnoid are more highly differentiated than those of the dura and therefore are more stable in character. The lining cells of the dura are mesothelium derived from the mesenchyme, are less stable and readily enter into any adjacent inflammatory reaction. When destroyed, they are replaced by the transposition of mesenchymal elements into mesothelium. The inner surface of the dura does not act as a limiting membrane in the presence of an attempted repair in the underlying meninges, but on the contrary enters intimately into the process. Consequently the pia-arachnoid, when injured, becomes adherent to the dura, and heals with adhesions.

Blood Calcium Studies.—The figures given by Bowler and Walters show that it requires approximately double the amount of injected calcium to raise the blood serum calcium content of the jaundiced dog to the same level as that of the normal dog, in spite of the fact that the blood calcium content is practically the same in jaundiced and normal dogs both before and after injection of a lethal dose, suggesting a calcium deficiency in the jaundiced animals which is not apparent in the blood serum calcium taken before the injection. This is borne out by the observation that although the lethal dose is larger in the jaundiced animal, the blood serum calcium contents taken at death are within a reasonable range of equality.

Cancer of Thyroid.—Among 3,640 cases of goiter examined by DeCourcy nine were diagnosed clinically as cancer. Of 850 thyroidectomies for adenomatous goiters, carcinoma was found microscopically in twelve cases and pronounced as doubtful in eight. Among the 3,640 cases examined, there were 1,242 thyroidectomies for all types of goiter. Of these, sixteen were truly cancer, while eight were doubtful—a true percentage of 1.3 per cent. and a doubtful percentage of about 2 per cent. of all operated cases during this time. Of all cases examined, cancer occurred in the doubtful percentage of about 0.7 per cent. or less than 1 per cent. DeCourcy believes that these figures indicate that while cancer of the thyroid, on the surface, is not very frequent, yet a thorough microscopic examination of each specimen removed would show it to be more frequent than is ordinarily supposed.

Resuscitation by Heart Massage.—Lee and Downs report a case of cardiac arrest which occurred during an exploration of the upper abdomen of a patient under ether narcosis. They call attention to the efficiency of cardiac massage in reestablishing heart action in such a catastrophe, and emphasize the simplicity of the procedure. It is suggested that restorative measures are never exhausted or completed in such an accident unless direct cardiac massage has been tried.

Splenectomy for Traumatic Rupture of Spleen.—Pfeiffer and Smyth report four cases in which the spleen was removed following traumatic subcutaneous rupture. These four cases have been followed for periods ranging from one year and nine months to three years and nine months. In every instance the patient still has a mild, though distinct, anemia. The leukocyte count has returned in all cases to within normal limits. All patients have pronounced enlargement of the superficial lymph glands, and all complain of tiring easily. The changes in the resistance of the erythrocytes is not constant. The platelet count is low in all, if 600,000 is normal. No marked change in the structure of the erythrocytes is apparent. These patients were all adolescent boys, and normal growth and development has not in any way been interfered with by splenectomy.

Kidney Tumors in Children.—The tumor in the case reported by Hinman and Kutzman was of the "mixed embryonic type." It weighed 4.5 kg. (9.9 pounds) and measured 30 cm. in all dimensions. Following the removal of the tumor, the patient (aged 6 years) went into shock and despite all efforts to resuscitate, she died.

Symptoms of Kidney Pelvis Papilloma.—The chief diagnostic findings in the case cited by Jones and Carroll were persistent hematuria with weakness and pain in the left lumbar region radiating to the groin. The pyelogram showed a normal lower calix and absence of the two upper calices. A diagnosis of papillary epithelioma of the left renal pelvis was made and the kidney was removed. The patient recovered.

Squamous Cell Tumors of Kidney Pelvis.—Five cases of squamous cell tumors of the renal pelvis are recorded by Scholl and Foulds. Four of these cases were associated with renal stone; the calculi in three kidneys were extremely large and of the staghorn type. One patient died eight days after operation, three others died during the first four months. The fifth patient is alive without symptoms of recurrence, six months after operation.

Trauma of Recurrent Laryngeal Nerve.—Taylor's case presented definite evidence of immediate and complete paralysis of one vocal cord after double ligation with fine silk of one recurrent laryngeal nerve with hemisection between the ligatures, which were removed as soon as the mistake was discovered. Restoration of function was complete within sixteen months.

Arkansas Medical Society Journal, Little Rock

21: 95-110 (Oct.) 1924

Placenta Accreta. St. C. Cooper, Fort Smith.—p. 95.
Existence of Specific Vitamin for Reproduction. B. Sure, Fayetteville. —p. 96.
Relationship Between Doctor and Hospital. C. S. Holt, Fort Smith. —p. 98.
Prostatic Calculi. J. A. Foltz, Fort Smith.—p. 102.

Boston Medical and Surgical Journal

191: 913-960 (Nov. 13) 1924

*Pneumococcus Endocarditis. E. A. Locke, Boston.—p. 913.
*Sarcoma of Nose; Case Ten Years After Operation. G. A. Moore, Brockton.—p. 926.
*Pneumothorax Therapy in Tuberculosis. W. A. Gekler, Albuquerque, N. M.—p. 930.
*Echinococcus Cysts. J. F. Curran and A. W. Locke, Worcester.—p. 932.
*Experimental Production of Dried Breast Milk. L. W. Smith and P. W. Emerson, Boston.—p. 938.

Pneumococcus Endocarditis.—Four cases of acute bacterial endocarditis due to the pneumococcus are reported by Locke.

Death supervened in each case. Details of the necropsies are given.

Sarcoma of Nose.—Moore reports a case said to be unusual (1) because of the situation of the growth. Only one other case has been found in the literature limited to the cartilaginous portion of the nose. (2) The problem in differential diagnosis between sarcoma, inflammation and rhinophyma. (3) The apparent complete freedom from extension or metastases ten years after removal of the growth. (4) The radical method of treatment. Apparently this is the only case of sarcoma of the nose treated by amputation.

Pneumothorax Therapy in Tuberculosis.—Gekler stresses the fact that in a unilateral cavity case without contraindication it is unjust to the patient not to employ pneumothorax, if several months of intensive rest have produced no definite improvement. It is a mistake to collapse large parenchymatous lesions which have not yet broken down. Small doses frequently repeated are more logical and in practice more satisfactory than large doses at longer intervals. Fluid should not be allowed to remain in the thoracic cavity undisturbed. Aspiration should aim to completely empty the chest of fluid. Roentgen-ray study, both before and during the course of treatment, should be carried on with sufficient intensity to keep the physician informed at all times of what is transpiring in the chest.

Echinococcus Cysts.—Curran and Locke report two cases of echinococcus cysts, one of the kidney and one of the peritoneal cavity. In the second case the cyst was inseparably connected with the liver. In the first case, the patient survived a nephrectomy. The second patient died after the third operation.

Experimental Production of Dried Breast Milk.—An experimental method for the production of dried breast milk is presented by Smith and Emerson. It represents a modification of the Just-Hatmaker process as used commercially. Criticism of the present method is offered with suggestions whereby it might be modified to secure an improved product. A plea for the furtherance of the use of dried breast milk as the most logical substitute for fresh breast milk in cases requiring breast milk and where the fresh milk is not available, is made, with an outline of the methods of collection now in use at the Boston Floating Hospital.

Endocrinology, Los Angeles

8: 617-718 (Sept.) 1924

Recent Work on Insulin. C. H. Best, Toronto.—p. 617.
*Clinical Assaying of Insulin and Insulin Requirement. R. M. Wilder, Rochester, Minn.—p. 630.
*Brain Development in Anurin Larvae After Thyroid or Pituitary Gland Removal. B. M. Allen, Los Angeles.—p. 639.
*Hyperovarianism: Specific Treatment. A. do Amaral, Sao. Paulo, Brazil.—p. 652.
*Parathyroid Tetany. L. R. Dragstedt, Chicago.—p. 657.
*Feeding Interrenal Gland in Cases of Exophthalmic Goiter. S. Shapiro, N. Y.—p. 666.

Action of Insulin.—The fact that consistent values for the glucose equivalent of insulin have been obtained under standard conditions with patients of different ages and weights, is, in Wilder's opinion, evidence for the assumption that the action of insulin is directly on glucose and that a definite chemical interaction occurs between insulin and glucose.

Brain Development After Thyroidectomy.—Allen states that the brain follows the general rule so well illustrated in the other somatic organs that the tadpole retains its larval character both externally and internally when the thyroid gland or the pituitary gland is removed.

Serum Therapy in Hyperovarianism.—Amaral uses the serum of animals (ewes and she goats) aseptically ovariectomized. The first bleeding is done about twenty or thirty days after the operation. The serum is administered either in natura by injection or with 40 per cent. neutral glycerin by mouth. In five cases of menorrhagia Amaral reports good results from the use of this serum.

Treatment of Parathyroid Tetany.—Eighty dogs on whom a complete thyroparathyroidectomy had been done, have been kept alive by Dragstedt for varying periods by the prevention of bacterial proteolysis in the intestines by special diets and by the intravenous injection of large amounts of Ringer's solution. Seventy per cent. of these dogs have survived for from two months to two years. Included among the 30 per cent. that died within the two months period are those killed by accident or that died from intercufrent infections. Dragstedt is convinced that such a large percentage of recovery cannot be explained on the basis of the presence of accessory parathyroid tissue, as at present anatomically and physiologically defined. The fact, however, that parathyroidectomized dogs may be kept alive and free from tetany for indefinite periods by the daily oral administration of from 20 to 30 gm. calcium lactate, is, perhaps, of still greater significance. The rôle played by the calcium is not readily understood. Dragstedt is convinced that the prevention of parathyroid tetany by checking bacterial putrefaction in the gastro-intestinal tract indicates that this must be the chief source of the tetany poisons in male and nonpregnant female dogs. Tetany in pregnant dogs cannot, however, be controlled by this method. It can, however, by the intravenous injection of Ringer's solution, and it appears very probable, accordingly, that during pregnancy poisons, capable of causing tetany, may arise elsewhere. Parathyroid tetany in pregnant dogs may also be prevented and controlled by the oral administration of calcium lactate. Larger amounts are necessary than suffice for nonpregnant animals. Thus, if this calcium salt exerts an antitoxic action, its influence is not only local but must extend also to poisons in the blood stream.

Interrenal Gland Therapy of Exophthalmic Goiter.—The preparation used by Shapiro was a 50 per cent. glycerol emulsion of fresh ox interrenal glands from which approximately 90 per cent. of the epinephrin containing tissue had been removed. The average dose was 30 c.c. daily. The outstanding effects were a rapid gain in body weight and improvement in muscle strength associated in the asthenic patients with hypotension with a progressive rise in blood pressure to about the normal level, where it remained. Concomitant with the increase in body weight there occurred a temporary rise in heat production which persisted as long as three months after medication was stopped without any fall in weight. Another effect, a source of great relief to the patient, was the influence on abnormal menstruation. Diarrhea was a common symptom and usually disappeared at the same time that improvement in general condition occurred. Four illustrative cases are described.

Florida Medical Association Journal, St. Augustine and Jacksonville

11: 87-118 (Oct.) 1924

Surgical Diagnosis. J. S. McEwan, Orlando.—p. 87.
Early Diagnosis and Treatment of Pulmonary Tuberculosis. H. H. Harris, Jacksonville.—p. 90.
Mechanical and Chemical Properties of Sand Spur. Clinical Manifestations in Larynx. H. Marshall Taylor, Jacksonville.—p. 98.
Acute Osteomyelitis. J. K. Simpson, Jacksonville.—p. 101.
Lung Pathologies Other Than Tuberculosis. G. Raap, Miami.—p. 106.
Tonsillectomy Under Local Anesthesia. J. G. Patterson, Bartow.—p. 110.

Indiana State Medical Association Journal, Ft. Wayne

17: 331-366 (Oct. 15) 1924

Influence of Ignorance and Neglect on Incidence and Mortality of Cancer. W. J. Mayo, Rochester, Minn.—p. 331.
Nervous Disorders and Public Welfare. H. T. Patrick, Chicago.—p. 334.
Adenomatosis of Thyroid. J. W. Snyder, Indianapolis.—p. 337.
Contagious Diseases. C. S. Bosenbury, South Bend.—p. 340.

Journal of Bone and Joint Surgery, Boston

6: 757-957 (Oct.) 1924

*Autogenous Bone Grafts for Nonunion in Long Bones. N. T. Kirk, Washington, D. C.—p. 760.
*Chronic Infectious Arthritis. P. P. Swett, Hartford, Conn.—p. 801.
*Incidence of Tuberculosis of Spine at Children's Hospital, Boston. F. Muro, Detroit.—p. 805.
*Anatomic Variation of Lumbosacral Joint. A. Whitman, New York.—p. 808.
Routine Examination of Low Back Cases. M. N. Smith-Petersen, Boston.—p. 819.
Rotary Subluxation at Knee. C. L. Lowman, Los Angeles, Calif.—p. 827.
Bone and Joint Tuberculosis. E. G. Brackett, Boston.—p. 832.
End Results of Stabilizing Operations on Foot. L. T. Brown, Boston.—p. 839.

Scoliosis. R. W. Lovett and A. H. Brewster, Boston.—p. 847.
Treatment of Structural Scoliosis at Massachusetts General Hospital. A. Klein, Boston.—p. 858.
Fracture of Neck of Femur. J. C. Wilson, Los Angeles.—p. 876.
*Ununited Fractures: Inorganic Bone-Forming Elements in Blood Serum. H. A. Petersen, Baltimore.—p. 885.
*Blood Viscosity in Trophic Disturbances of Circulation. W. G. Stern, Cleveland.—p. 902.
Low Back Pain and Sciatica. G. I. Bauman, Cleveland.—p. 909.
*Adduction Shoe-Wedge. J. J. Nutt, New York.—p. 915.
Displacement of Internal Semilunar Cartilage in Boy Aged Four Years. F. Christopher, Evanston, Ill.—p. 918.

Autogenous Bone Grafts.—Kirk reports the results of 158 bone graftings done on 135 patients for nonunion and loss of substance in bones of the extremities. These cases have been divided into: (1) ununited simple fractures without bone infection, for which there were twenty-nine grafts; and (2) a group of 129 cases the result of war wounds or other compound fractures followed by severe infection of bone and soft parts. In the first group twenty-seven grafts were successful. In the second group seventy-six were successful. The majority of these cases were the result of war wounds, in which at the time of injury severe damage was sustained by the bone as well as its surrounding soft parts. The bone showed marked atrophy and osteoporosis, with low osteogenic power, and latent infection was present in the bone and the surrounding scar tissue, and the circulation in both was markedly impaired. The types of grafts which proved successful were: Inlay, 78 cases; intermedullary, 17 cases; osteoperiosteal, 5 cases; peg (not intermedullary), 2 cases, and transplant, 1 case. The unsuccessful grafts were 37 inlays, 15 intermedullary and 2 osteoperiosteal.

Chronic Infectious Arthritis.—Experience has convinced Swett that synovectomy is an operation that warrants further trial in carefully selected cases of chronic infectious arthritis. It may be expected to promote the restoration of function to those joints in which resolution of the exudate has been delayed. It may, also, prevent the further destruction of the cartilages and the secondary ankylosis which would result from the prolonged presence of large amounts of organized inflammatory exudate. This operation is applicable to those joints in chronic infectious arthritis in which there is delayed resolution of the synovial exudate. It should be done before bone and cartilage changes occur, in the hope of preventing such changes. Further, bone and cartilage changes do not contraindicate synovectomy, but the resultant benefit may be prejudiced by such changes and to a degree in direct proportion to their extent.

Tuberculosis of Spine in Children.—Muro analyzes 341 cases of tuberculosis of the spine in which the lesion was situated as follows: 179 cases in the dorsal region; 63 dorsolumbar, and 23 cervical. The Pirquet test was positive in 184 cases and negative in 29. In 41.1 per cent. of the cases there was a positive history of trauma. As to heredity, ninety-two had a positive history; 183 a negative history. The most frequent cause of death was tuberculous meningitis, seven cases. One patient died of tuberculous peritonitis and one of general tuberculosis.

Anatomic Variation of Lumbosacral Joint.—The group of cases described by Whitman presented abnormal lumbar lordosis of a peculiar and distinctive type which he terms prespondylolisthesis. The complaint for which these patients sought relief was pain in the back. The treatment consists of some form of support. One of Whitman's patients consented to an operation for the purpose of internal rather than external splinting. The result was complete success.

Constitutional Cause of Nonunion of Fractures.—Petersen states that in many cases of ununited fractures, there is as underlying basis a constitutional disturbance responsible for the condition, demonstrable as a deficiency in the inorganic bone-forming elements of the blood. This deficiency shows itself as either a low phosphorus or a low calcium content, in most instances the former. In those patients presenting a low phosphorus content there is usually an abundant callus, but no calcification; whereas those patients with low calcium content usually show little or no callus. No healing takes place when the inorganic constituents, calcium and phsophorus, are so reduced that the product of these elements is less than thirty; little healing takes place between thirty and thirty-five; active healing results with a product between thirty-five and forty. Patients with ununited fractures in whom there is a deficiency of one or the other of these elements will, when the deficiency is compensated, go on to healing.

Blood Viscosity in Trophic Disturbances.—Angiotrophosis, which includes the so-called Buerger's disease or thromboangiitis obliterans, is the only disease with a normal red blood count in which a high viscosity is not an unusual exception. In this disease 85 per cent. of all cases investigated by Stern had blood viscosities of 4.8 or over. This finding, the presence of painful papules, the clinical pictures of trench foot and the clinical course of many cases confirms Stern in his opinion that this entire group of conditions is more or less related and is usually amenable to treatment. In the immediate case the treatment should consist of rest in bed, bland diet, heat in the form of continuous electric light baths to the extremities, the ingestion of from 4,000 to 6,000 of c.c. of Ringer's solution by means of the duodenal tube, and sodium iodid intravenously. After the acute symptoms have subsided, the treatment should consist in an entire change in the habits of the individual in order to diminish the functional demands on the local circulation, and the avoidance of all forms of toxic absorption from whatever source, the circulation exercises devised by Buerger, and at the same time the ingestion of large quantities of water to keep down the blood viscosity. The body must at all times be protected from being chilled or compressed, not an easy matter in these days of light clothing, openwork shoes and stockings, and tight, narrow shoes.

Adduction Shoe Wedge.—Nutt uses a heel wedge and a metatarsal wedge. The heel wedge does not extend all along the inner side of the heel, but is placed at the front only. It tilts the os calcis upward and backward as well as outward. The metatarsal wedge reaches from the supporting surface to the part of the sole under the first metatarsal. It flares inward, and materially helps to prevent eversion, but does not invert the foot. These wedges are not to be used with dorsal flexion limited to ninety degrees or more, not with a nonflexible shank shoe, nor without instructions and training in normal walking. Nutt has found them of great value in correcting deformities, relieving strain and in function training.

Journal of Cancer Research, New York

8: 317-441 (Oct.) 1924

*"Endothelioma" of Pleura. H. E. Robertson, Rochester, Minn.—p. 317.
*Influence of Radium on Tumor Susceptibility in Albino Rats. K. Sugiura, New York.—p. 376.
*Effect of a Constant Ration Containing Many Vegetable Proteins on the Incidence of Spontaneous Tumors in Mice. M. C. Marsh, Buffalo.—p. 385.
*Comparison of Effects of Various Salts on Cancer Cells and Normal Cells. L. Herly, New York.—p. 389.
*Primary Carcinoma of Trachea: Case. J. R. Broman, Chicago.—p. 394.
*Relation of Von Recklinghausen's Disease (Multiple Neurofibromatosis) to Giant Growth and Blastomatosis. F. Winestine, Berlin.—p. 409.
*Mineral Salts in Their Relation to Malignant Tumors. G. L. Rohdenburg and O. F. Krehbiel, New York.—p. 423.

Endothelioma of Pleura.—Robertson presents a complete review of the literature on pleural tumors and records his experience with four tumors of the pleura which was similar to that of other writers on the subject. One case of typical appearing "endothelioma" of the pericardium, was revealed by microscopic study to be an adenocarcinoma. This review apparently proves that only the sarcomas can be classified as primary malignant tumors of the pleural tissues, and that all other growths are secondary, representing extensions, implantations or metastasis from an unrecognized or latent primary source, usually the lungs.

Influence of Radium on Tumor Susceptibility.—The growth of the Flexner-Jobling rat carcinoma in untreated suckling rats was compared by Sugiura with the growth of similar animals after irradiation with radium emanation. A total of 143 untreated animals and of 337 irradiated animals was studied. As a result of this work he concludes that preliminary irradiation of suckling rats with radium emanation

is practically without influence on the susceptibility of these animals to Flexner-Jobling rat carcinoma. There are, however, indications that the suberythema doses, or mild radiations, confer a very slight immunity, while larger doses have the opposite effect. Such action, if it exists at all, is so slight that experiments with several thousand animals would probably be necessary to settle definitely the question involved.

Effect of Diet on Tumor Incidence.—The results of Marsh's experiments were negative. A ration composed of nineteen crude raw foods, chiefly grains and seeds, was fed continuously throughout their lives to albino nonbreeding mice of inbred tumor strain. The tendency to develop tumors was not increased thereby.

Effect of Salts on Normal and Cancer Cells.—Herly states that normal cells and cancer cells are equally damaged by incubation at 37 C. in a considerable volume of physiologic sodium chlorid solution, slightly less injured by incubation in Ringer's solution, and least by Locke's solution. No difference between the effects of these three solutions on the cancer cell and the normal cell was found.

Primary Carcinoma of Trachea.—To fifty-seven cases of primary carcinoma of the trachea now on record Broman adds one case. The symptoms were hoarseness, pains in the neck and back, headaches, anorexia, loss of weight, cough and swelling of the neck. The clinical diagnosis was carcinoma of the thyroid. Later a second diagnosis of mediastinal tumor, with subcutaneous metastases, was made. Postmortem examination revealed a carcinoma of the trachea.

Relation of Neurofibromatosis to Giant Growth and Blastomatosis.—Winestine asserts that there is a close topographical relation and genetic coordination between true giant growth and blastomatosis of an intestinal segment and its corresponding nerves. The case which is analyzed shows that this relation can occur in the form of a pure blastomatosis of nerves and intestinal segment without giant growth. It presents neurofibromatosis of the pelvic and sympathetic plexuses combined with a very unusual blastomatosis of the lowest rectal segment, namely, papillary adenomatosis of the mucous membrane penetrating into the inner layer of the thickened muscular wall.

Relation of Mineral Salts to Tumors.—Experiments made by Rohdenburg and Krehbiel showed that it would be foolhardy to base the use of any mineral salt as a therapeutic agent in cancer patients on the results of these experiments because they prove that a change in the mineral salt content of the blood of a tumor bearer is most difficult to produce.

Journal of Radiology, Omaha

5: 335-367 (Oct.) 1924

Electric Coagulation. G. Kolischer, Chicago.—p. 335.
Modern Theories of Electricity in Their Bearing on Roentgen-Ray Therapy. G. Kolischer, Chicago.—p. 337.
Treatment of Malignant Tumors by Combination of Surgical Diathermy and Radiotherapy. G. Kolischer, Chicago.—p. 339.
Ultraviolet Treatment of Deafness. T. B. Lacey, Glenwood, Iowa.—p. 341.
Physiotherapy in General Practice. J. G. Walsh, Woodbine, Iowa.—p. 342.
Surgical Diathermy in Treatment of New Growths of Face and Mouth. A. F. Tyler, Omaha.—p. 343.
Experiments in Roentgen Ray Protection. J. W. Whittington, Cambridge, Mass.—p. 347.
Roentgen-Ray Diagnosis of Brain Tumor. F. M. Duffy, Cherokee, Iowa.—p. 353.

Medical Journal and Record, New York

120: 365-416 (Oct. 15) 1924

Teratoid Tumors and Teratology. W. R. Williams, Somerset, England.—p. 365.
Auscultatory Percussion and Palpation. L. N. Boston, Philadelphia.—p. 367.
Balance Between Food Intake and Insulin Dosage. L. T. Gager, New York.—p. 372.
Foreign Bodies in Tongue. W. H. Schmidt, Philadelphia.—p. 375.
Pellagra. N. M. Owensby, Atlanta, Ga.—p. 377.
Carbon Monoxid and Dioxid. E. M. Vaughan, Brooklyn.—p. 379.
Case of Pertussis Complicating a Gastric Ulcer. J. C. Regan, Brooklyn.—p. 381.
Significance of Enlarged Glands in Neck. J. Friedman and S. D. Greenfield, Brooklyn.—p. 382.
Heterotopia of Central Nervous System in Relation to Malformation of Body Segments and Nervous Diseases. H. Winsor, Haverford, Pa.—p. 385.
Therapy of Nonspecific Protein Reaction. R. H. Spangler, Philadelphia.—p. 387.
Use of Kidney According to Galen. J. Wright, Pleasantville, N. Y.—p. 390.

New York State Journal of Medicine, New York

24: 871-912 (Oct.) 1924

Postural Deformities in Children. A. Whitman, New York City.—p. 871.
Acute Osteomyelitis in Children. R. R. Fitch, Fochester.—p. 875.
Destruction and Removal Versus Removal and Destruction in Accessible Neoplastic Diseases. G. A. Wyeth, New York City.—p. 877.
Kidney Disease in Light of Recent Studies. R. Floyd, New York City.—p. 881.
Forty Cases of Lateral Sinus Thrombosis. R. T. Atkins, New York City.—p. 885.
Incarceration of Cervix with Edema as Cause of Dystocia in Labor. D. A. Calhoun, Troy, N. Y.—p. 890.

Northwest Medicine, Seattle

23: 441-488 (Oct.) 1924

*Relations of Pancreas to Diabetes Mellitus. H. Oertel, Montreal.—p. 441.
Indications for Use of Insulin. R. M. Wilder, Rochester, Minn.—p. 444.
Diabetic Treatment. C. H. Sprague, Pocatello, Idaho.—p. 447.
*Mortality of Diabetes Mellitus in Seattle and State of Washington. L. J. Palmer, Seattle.—p. 450.
Cerebroventricular Study. G. W. Swift, Seattle.—p. 452.
Treatment of Fractures of Skull. G. A. Downs, Spokane.—p. 460.
*Abnormal Frequency of Urination in Women. A. B. Hepler, San Francisco.—p. 461.
Hydrocephalus. J. L. Treacy, Helena, Mont.—p. 466.
*Auricular Paroxysmal Tachycardia as Postdiphtheritic Complication. G. H. Anderson, Spokane.—p. 467.
Multiple Cartilaginous Exostoses. E. E. Christofferson, Portland, Ore.—p. 469.

Relation of Pancreas to Diabetes Mellitus.—Oertel points out that the generally still accepted views on the internal secretions of the islands in relation to burning of blood sugar must be revised. Not the islands, but the pancreas as a whole is concerned in the diabetic symptoms complex. It is still an open question whether the concern of the pancreas in sugar metabolism occurs through an internal, chemical secretion, or in some other manner as regulator of metabolic activity. Much additional experimental evidence has recently accumulated which is in favor of this latter view, and there is hardly anything which, when critically reviewed with our present knowledge, remains in favor of the original suggestion.

Mortality of Diabetes in Washington.—The diabetes death rate in the state of Washington in 1922 was 19.0; in 1923 it dropped to 16.0. For the first six months of 1924 it was 9.0. Insulin first came into limited use in Washington about Jan. 1, 1923. The death rate for that year shows a sharp but moderate drop. However, for the first six months of 1924, during which time insulin has been available for general use, the death rate per hundred thousand for Seattle and the state is the lowest that it has ever been since the state was first taken into the registration area.

Urethrotrigonitis Causes Frequent Urination.—Analysis of 250 cases has convinced Hepler that frequency of urination in women is most often an evidence of a urethrotrigonitis which may be associated with other conditions, or exist alone as a definite entity. Urinary infections to which women are especially prone, due to the exigencies of the sex life and child bearing, tend to localize in the glandular structures of the urethra, and as a result stricture of the female urethra is not uncommon. Frequency of urination may be the only subjective symptom in many instances of affections of the kidneys and urethra, and for that reason every case demands a thorough examination.

Auricular Paroxysmal Tachycardia Following Diphtheria.—The case cited by Anderson showed an auricular paroxysmal tachycardia with a rate of 230 per minute. This exceedingly rapid rate had apparently existed about seventy-two hours before death. It is of interest that even with a rate as high as this the ventricle kept pace with the auricle and the rhythm did not change to auricular flutter. The patient died suddenly when, in attempting to swallow water, he strangled slightly.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 841-884 (Nov. 8) 1924

Tuberculosis of Larynx. C. S. C. Thomson.—p. 841.
*Cervical Ribs in Children. A. H. Southam and W. J. S. Bythell.—p. 844.
*Venous Pulsations and Venous Tracings. H. Sainsbury.—p. 846.
*Classification of Chorea in Relation to Its Causes. C. J. Macalister.—p. 849.
Acute Appendicitis in Child Commencing with Diarrhea and Convulsions. B. Myers.—p. 850.
Postoperative Pulmonary Embolism. P. Lockhart-Mummery.—p. 853.

Cervical Ribs in Children.—Four cases of cervical ribs in children are described by Southam and Bythell and nine others are also analyzed. The authors are convinced that this condition has not received the consideration which it deserves.

Venous Pulsation Tracings.—Comparing the polygraphic record of the pulsations at the root of the neck, as interpreted at present, with the sequence of activities which the cardiac cycle exhibits, according to the experimental findings of physiology, Sainsbury discovered a want of agreement which forbids the utilization of that record for clinical purposes so long as the disagreement lasts.

Classification of Chorea.—Macalister divides choreas into three groups: (1) The ordinary: rheumatic or toxic type; (2) "stock-brained" cases, related to an inherited tendency, and (3) a climacteric type. There is often little to distinguish these cases so far as the movements of incoordination are concerned, but some of the associated phenomena present considerable distinctions. The interesting fact was revealed that in the so-called "fright" choreas the children were sometimes left handed or, being right handed, came of a left-handed stock, whereas the rheumatic children presented this sort of history in a very limited number of cases—probably representing rheumatism in children having the hereditary factor referred to. It was on this account that the non-rheumatic cases became "stock-brained choreas," and it is these cases that Macalister discusses. In a few instances children suffering from this form of chorea have belonged to families in which there were stammerers. The choreic movements probably represent a gross motor ataxia or incoordination which may be regarded as analogous to vocal stammering. As a consequence of fright or other disturbance an unbalancing of coordination is brought about, owing to some unusual relationship of function on the opposite sides of the brain.

British Journal of Ophthalmology, London

8: 449-496 (Oct.) 1924

Diagnosis of Vertical Deviations of Eyes. R. O'Connor.—p. 449.
Needling Lens Capsule After Cataract Extraction. B. Lang.—p. 459.
Removing Lens in Extraction of Senile Cataract. B. Lang.—p. 464.
Serous Cyst of Orbit Caused by Anilin Pencil. F. Juler.—p. 466.
Amblyopia Due to Amebic Dysentery; Recovery. A. Ferguson.—p. 467.
Microscopy of Living Eye. B. Graves.—p. 467.

Lancet, London

2: 997-1048 (Nov. 15) 1924

*Progress of Pathology. A. E. Boycott.—p. 997.
*Rheumatism Prevention. F. J. Poynton.—p. 1000.
*Precipitin Method for Standardization of "Old" Tuberculin. G. Dreyer and R. L. Vollum.—p. 1003.
*Extensive Hemorrhage into Pituitary in Case of Lethargic Encephalitis. L. P. De Costobadie.—p. 1007.
Liver Abscess: Sixty-Four Cases. E. O. Thurston.—p. 1008.

Progress of Pathology.—Boycott predicts that: We shall have a technological pathology in the medical school and a general pathology in the science faculty. There will be no divorce of clinical from scientific work, but each of the partners will be free in the service of the other. Much of what is now called pathology must be transferred to medicine and hygiene where it properly belongs. Especially should that curious hybrid "clinical pathology" be brought to an end. It has been an extraordinary useful makeshift, but it is pathologically sterile and has other mulish qualities, and being essentially diagnosis, should be distributed between the appropriate clinical subjects. This transference has begun, its need is widely recognized, and in due course, no doubt, it will be complete. The change is made easy by the establishment of the whole-time clinical departments which, if only people will have patience, are going to transform the whole atmosphere of our medical schools. Similarly in hygienic bacteriology, diagnosis should pass to the health officer and the scandal of university departments engaged in trade, prevalent enough in England, ought to be stopped. In each case the change will be much to the advantage of both parties. Both the clinician and the medical officer of health will gain by having the work in their own hands, and the pathologist will be free of a mass of dull work of which he seldom sees the real significance and which at the best affords a placid occupation for unimaginative minds.

Prevention of Rheumatism.—Poynton outlines plans of study whereby it may be possible eventually to prevent rheumatism. These plans include the practitioner, the hospital, health agencies, factory surgeons, education of the public and research.

Standardizing Tuberculin.—Dreyer and Vollum describe an original method by means of which they can measure with considerable accuracy the strengths of different dilutions of the same tuberculin or of different tuberculins. It is a precipitin method.

Hemorrhage into Pituitary.—De Costobadie cites the case of a man, aged 49, who was ill for a fortnight with marked insomnia, severe frontal headache, and occasional vomiting. Later he passed into a case of restless delirium with violent choreiform movements; this alternated with profound stupor, when he would lie for hours motionless upon his back with waxy pallor, closed eyes, and masklike face. He had the dry, furred tongue and fetid breath usually present in severe cases. Ptosis was marked, he was at no time ever able to open his eyes. He had remission of symptoms with movements of unclouded intelligence during the four weeks before he died, also transient involvement of other cranial nerves. He had purulent conjunctivitis. The cerebrospinal fluid was under increased pressure. The urine, which was not excessive, showed no sugar or other abnormality. The temperature was in the region of 101 F. for the first fortnight and then remained at 97 F. The pulse was unusually slow and he appeared to feel the cold unduly. The restlessness became more marked, with much rigidity of the limbs; the patient became gradually weaker, and died six weeks after the onset of the disease. The only suggestion that there was a deficiency of secretion was the patient's unusual hairlessness. Though pubic hair was present, he had never shaved, and the skin was of that soft velvety type with much panniculus seen in cases of hypopituitarism. The pituitary secretion, appeared as a hemorrhagic mass except for a small pale area posteriorly.

Medical Journal of Australia, Sydney

2: 340-364 (Oct. 4) 1924

Injuries and Diseases in Australia Attributable to Animals (Except Insects). J. B. Cleland.—p. 340.
Deaths from Tick Paralysis in Human Beings. E. W. Ferguson.—p. 345.
*Case of Spontaneous Rupture of Heart. H. C. Hosking.—p. 348.
*Placenta Praevia in Early Pregnancy. J. S. Green.—p. 349.

Spontaneous Rupture of Heart.—Hosking relates the case of a woman, aged 70, a mental patient, who while taking a bath collapsed. She died fifteen minutes later. The necropsy disclosed two slits or tears in the left ventricle. The whole myocardium was pale and flabby and heavily infiltrated with fat. Both coronary arteries were rigid and calcareous. The left branch led directly to the upper of the two slits, but the vessel was too contracted to be traced right into it. Just after the vessel crossed to the left auriculo-ventricular border its lumen was especially contracted and at this place there was a small and rather adherent clot. The picture presented by this case is that the ordinary myocardial degeneration due to the slow closure of the coronary arteries, but ending with one of the more rare types of termination, where the general weakening due to the anemia from the slow closure

has been followed by a sudden local weakening due to abrupt closure of one of the vessels. This probably occurred at the time of her bath, the exertion of which called for increased effort from the generally and locally weakened organ. Obviously, the factor determining rupture is the relation existing between the pressure inside the heart and the strength of the cardiac wall. Apparently rupture per se is not sufficient reason for the cessation of the heart's action, for in many of the recorded cases the patients have lived for times varying from several hours to days after the presumed time of rupture. As regards the incidence of the condition, Hosking suggests that this is much higher than is generally supposed.

Placenta Praevia in Early Pregnancy.—The two cases presented by Green demonstrated the presence of a low implantation in cases of three months' pregnancies. One of the cases has the additional interest of demonstrating the association of a concealed hemorrhage with a placenta praevia and illustrates the point mentioned by Fairbairn of the differential diagnosis from hydatidiform mole.

Medical Journal of South Africa, Johannesburg

20: 1-26 (Aug.) 1924

Nitrous Oxid-Oxygen Anesthesia. B. Weinbren.—p. 2.
Pulmonary Syphilis. H. Gluckman.—p. 7.
Law and Doctor in South Africa. H. De Villiers.—p. 9.

Annales des Maladies Vénériennes, Paris

19: 721-800 (Oct.) 1924

*Treatment in Different Stages of Syphilis. Golay and Weyl.—p. 721.
*Flocculation Tests in 1,500 Serums. Starobinsky and Weyl.—p. 733.
*Case of Jaundice of Gonococcal Origin. M. Raynaud et al.—p. 737.

Comparative Treatment in the Different Stages of Syphilis.—Golay and Weyl point out that syphilis, which is a more generalized disease in the secondary period, is more localized in the tertiary stage. Consequently, they believe that treatment, although necessarily prolonged and consisting of repeated courses, may be less intensive in the tertiary stage.

Flocculation Test.—Starobinsky and Weyl's study of the Sachs-Georgi test on over 1,500 serums, proved the high specificity of the reaction. No marked flocculation was manifest in 120 nonsyphilitic serums. The reaction may be negative in the secondary stage of nontreated syphilis. In other periods of the disease, the value of the flocculation test is the same as that of deviation of complement. The defects of the reaction are the instability of the antigen, and often, also, difficulty in interpretation of the findings.

Jaundice of Gonococcus Origin.—Raynaud, Montpellier and Boutin observed a case of gonococcal urethritis and orchiepididymitis, associated with a syndrome of urobilin jaundice, which seemed to be of the same origin. The simultaneous onset of the jaundice and of the epididymitis, and a negative blood culture suggested gonococcal hepatitis. The jaundice disappeared without special treatment.

Annales de Médecine, Paris

16: 247-379 (Oct.) 1924

Etiologic Study of Balantidiasis. Dopter.—p. 247.
Vaccination Against Diphtheria. J. Renault and P. P. Lévy.—p. 261.
*Cytotropic Viruses. A. Philibert.—p. 283.
*Prophylaxis of Measles. R. Debré and P. Joannon.—p. 309.
*Vaccination Against Measles. J. Paraf.—p. 333.
*Bacteriophage in Treatment of Infections. P. Hauduroy.—p. 340.
Recent Research on Influenza. L. Bernard and M. Thomas.—p. 359.

The Filtrable Viruses.—Philibert points out the exclusive affinity of the cytotropic viruses for the protoplasm of living cells. Positive cultures can be obtained only in these cells. These filtrable viruses have a dual action, stimulating the nucleus of the cell, and inducing lysis of the cell, one or the other property predominating. When the affinity is predominantly for the epithelium, the infection may induce smallpox, vaccinia, foot and mouth disease, sheep-pox or herpes; when predominantly for the nervous tissue, the result may be encephalitis, poliomyelitis or rabies. When the affinity is for the endoderm, the result may be hog cholera, avian diphtheria; when the affinity is for microbes, we behold bacteriophagy. In all of these the cytolytic property predominates. In trachoma, warts and chicken sarcoma, the cytokinetic property predominates. These viruses are invisible; they pass through porcelain, and are destroyed by bile, heat and saponin. Juxtanuclear corpuscles appear in the cells harboring the virus. These viruses do not produce inflammation or necrosis of the connective tissue. They are not transmitted by insects, the contagion from the cytotropic viruses being a direct one; it occurs most readily by intracellular inoculation. Their nature is still a complete mystery, differing from all other known forms of life.

Convalescents' Serum in the Fight Against Measles.—Debré and Joannon advocate sero-immunization as an undeniably effectual measure to prevent, or to attenuate measles. They emphasize the innocuousness of the method.

Adults' Serum in Prophylaxis of Measles.—Paraf suggests preventive injections of convalescents' serum or adults' serum in all children under 5 years, as soon as the first cases of measles appear. The result may be a rapid attenuation of the epidemic. The period of immunity is short, and the injections may have to be repeated several times in a year.

The Bacteriophage in Treatment of Infectious Diseases.—Hauduroy asserts that many infectious diseases, such as dysentery, typhoid fever, plague or cholera, may be prevented or cured by d'Herelle's bacteriophage. He believes that the latter in some cases actually sterilizes the organism. No more than two or three subcutaneous injections, 3-4 c.c. per dose, at twenty-four hour intervals, are indicated, as otherwise sensitization might occur. Four or five doses of 10-20 c.c. of the pure or diluted bacteriophage are taken by the mouth. A local reaction may occur several hours after the inoculation, and disappear in twenty-four hours. A general reaction is accompanied by sweating and is never grave. Negative results in one case were explained by the variable mixed infection. In another case the use of quinin by the patient checked the lytic action of the bacteriophage.

Bulletins de la Société Médicale des Hôpitaux, Paris

48: 1447-1486 (Oct. 31) 1924

"Recovery from Syphilitic Hemiplegia." A. Sézary.—p. 1448.
"Arsphenaminized Blood Transfusion in Typhoid Hemorrhage." P. Emile-Weil.—p. 1450.
*Case of Prolonged Pulmonary Gangrene. Caussade and Tardieu.—p. 1452.
*Primary Tuberculous Infection in Adult. Paisseau and Lambling.—p. 1462.
*Dermoid Cyst in Rectum. R. Bensaude and J. Rachet.—p. 1472.
*Antityphoid Vaccination in Parksonian Syndrome. M. Renaud.—p. 1479.
*Iodized Oil in Diagnosis of Thrombosis. Sicard et al.—p. 1483.

A Four Year Course of Pulmonary Gangrene.—Caussade and Tardieu report a case of this kind in a man, aged 43. The morbid process ended in a circumscribed abscess of the lung, still in progress. Only one similar case, they say, with a five years' course, has been published to date.

Primary Tuberculous Infection in Native African Adults.—Paisseau and Lambling refer to a case of tuberculosis in a young Senegalese, with a fatal issue in ten months. They recall that tuberculosis in the native colored race reveals the character of a primary infection, similar to that in infants. Tubercle bacilli were absent from the sputum until near the end. Tuberculous atheroma of the aorta was noted among other visceral localizations of the disease.

Dermoid Cyst in the Rectum.—Bensaude and Rachet give roentgenograms of a dermoid cyst with a broad base on the anterior wall of the rectum in a woman, aged 39. Dermoid cysts of the rectum seem to have been encountered almost exclusively in women, mostly between 30 and 40 years. The theory of inclusion of the elements of the cyst during embryonal life may be admitted. In this case the cyst is not causing appreciable disturbance.

Nonspecific Vaccination in Parkinsonian Sequelae.—Renaud states that he injected daily, in ten patients, with a history of encephalitis about three years ago, a gradually increasing dose of from 0.5 to 2 c.c. of a typhoid vaccine. The treatment was kept up for six weeks, but no effect on the symptoms could be detected.

Diagnostic Injection of Iodized Oil in Arterial Thrombosis.—Sicard, de Gennes and Coste believe that the site of an arterial thrombus may be determined by injection of iodized oil into the artery under roentgen-ray control. The necropsy confirmed the roentgen findings of the arterial obliteration in their two cases, which proved to be inoperable. The roentgen-

ray examination should be followed immediately by the operation. A dose of 1 c.c. or less does not seem to produce local or general disturbances. The iodized oil passes even the pulmonary capillaries without causing complications.

Journal de Radiologie et d'Electrologie, Paris

8: 385-432 (Sept.) 1924

*Roentgen-Ray Exposure After Mammectomy. M. Béclère.—p. 385.
Roentgen Findings with Hypertension in Aorta. L. Delherm and R. Chaperon.—p. 401.

Preventive Roentgenotherapy After Operation on Cancer of Breast.—Béclère is convinced that a single intensive irradiation is dangerous, as it augments the proportion of recurrences. Repeated irradiations of moderate doses seem to be efficient. Their action is limited to the exposed region, not passing beyond the limits of the chest.

Presse Médicale, Paris

32: 893-900 (Nov. 12) 1924

*Colon Disease Simulating Appendicitis. M. Brulé.—p. 893.
*Operation for Tropical Abscess of the Liver. P. A. Petridis.—p. 895.

Disease of the Colon Simulating Chronic Appendicitis.—Brulé warns against misleading symptoms of gastro-intestinal disturbances with pains in the appendix region, which are diagnosed as chronic appendicitis. Appendicitis plays a secondary part in this affection of the colon, with or without cecal stasis, and hence appendectomy is no help. An appropriate diet and prolonged medical treatment may improve conditions. He admits that the differentiation from real chronic appendicitis, consecutive to an acute attack, is difficult.

Operation for Tropical Abscess of the Liver.—P. A. Petridis emphasizes that the clinical syndrome, as well as an exploratory puncture, may sometimes fail in the diagnosis of tropical abscess of the liver. He advocates a special exploratory operation, serving for diagnosis and at the same time for cure, which was introduced by A. Petridis. The technic for this polypleurodiaphragmatotomy is described, and the results extolled.

Revue Franç. de Gynécologie et d'Obstét., Paris

19: 497-520 (Aug. 25) 1924

Temporary Exteriorization After Extraperitoneal Cesarean Section, on Suspicion of Infection. J. L. Audebert.—p. 497.
*Single Incision in Rigid Cervix Uteri. J. L. Audebert.—p. 499.
*Low Cesarean Section for Placenta Praevia. L. Aubert.—p. 501.
*Cesarean Section in Case with Double Uterus. M. Reeb.—p. 504.
*Intestinal Obstruction in the New-Born. R. Poinso.—p. 509.

Single Incision in Rigid Cervix Uteri.—Audebert prefers an incision to bimanual dilatation in case of rigidity of the cervix in labor. A single median incision of the anterior lip allows passage of the head. Sutures are not needed. Examination two years later of a primipara with such an incision showed perfect union of the incision, and the presence of a tear caused by previous manual dilatation.

Low Cesarean Section for Placenta Praevia.—Reporting a successful case, Aubert points out the conditions in which low cesarean section should be performed; namely, near or at full term, with a viable fetus, central insertion of the placenta, intact membranes, and the patient in a satisfactory state. He believes that the danger of injuring the placenta, while incising the lower segment of the uterus, is no greater than in the classic section.

Cesarean Section in Case of Double Uterus.—Reeb describes a cesarean section with a subtotal hysterectomy in a woman with a double uterus and slightly contracted pelvis. While it was the woman's seventh pregnancy, the operation was this time indicated on account of the large size of the fetus. Insufficient stretching of the lower segment, and excessive contractions during delivery were due to the second uterus. Its cervix, joined with the other, caused some resistance to the dilatation.

Intestinal Obstruction in Infants.—The necropsy in one of the two infants, 3 and 10 days old, showed that the obstruction was produced by a mucoid cyst, which originated in the cecum wall. The child died before the contemplated operation; the other died a few hours after a kink had been corrected through a laparotomy.

Revue de Médecine, Paris

41: 193-280, 1924

The Exophthalmic Goiter Syndrome. C. Achard.—p. 193.
*Exophthalmic Goiter with Other Nervous Affections. P. Sainton.—p. 210.
*Exophthalmic Goiter Brought on by Iodin Treatment. E. Ledoux.—p. 225.
Pathologic Anatomy of Exophthalmic Goiter. G. Roussy and R. Huguenin.—p. 230.
*Treatment of Exophthalmic Goiter. P. Marañon.—p. 248.
Radiotherapy in Exophthalmic Goiter. E. Beaujard.—p. 268.

Coincidence of Exophthalmic Goiter and Other Nervous Affections.—Sainton states that practically every nervous affection known has been encountered at some time with exophthalmic goiter, some exceptionally, others frequently. The study of their association is still very incomplete. The clinical symptoms present interesting problems with regard to the serologic and the endocrine reactions. The theory that the symptoms of the nervous disease are due to the endocrine lesions, or vice versa, is not accepted; some infection is the connecting link. He confirms that the principal cause of both, in the vast majority of cases, is syphilis, hereditary or acquired, which affects both the endocrine and the nervous systems at the same time.

Exophthalmic Goiter Brought on by Iodin Treatment.—Ledoux points out that treatment of goiter with iodin may cause various abnormal manifestations, most often exophthalmic goiter. Normally, the thyroid seizes and stores the iodin in the blood, after transforming it to iodothyrin or thyroxin. In exophthalmic goiter, this transformation does not occur. The absorption of iodin by a patient, with or without goiter, but predisposed to exophthalmic goiter, acts as an iodin anaphylaxis, and causes sudden symptoms of hyperthyroidism or dysthyroidism, with sometimes very grave results. These phenomena from iodin do not depend on the pharmacologic form or the manner of introduction into the body, and the dose is only of relative importance. He has observed cases of exophthalmic goiter brought on after only a few applications of iodin ointment to the goiter.

Treatment of Exophthalmic Goiter.—With personal experience in 1,015 cases of hyperthyroidism, Marañon emphasizes that it is essentially a medical affection, and should be treated by the internist. The two indications for surgical treatment are symptoms of compression and the failure of careful, persevering medical treatment. General hygiene, diet, and physical and mental rest are essential. The history should be studied to discover and eliminate possible factors causing or aggravating thyroid hyperfunction, which may be of a psychic type or of an infectious type. The endocrine, nervous, circulatory and digestive symptoms should be the guide to treatment. He relies mainly on ovarian extract (with ovarian insufficiency); on quinin, in young patients with extensive vasomotor instability; and on belladonna, with disturbance of the sympathetic nervous system. If medical treatment fails, radiotherapy should be tried before surgical treatment is attempted. The roentgen rays are most successful in simple and acute cases of hyperthyroidism, especially in patients with confidence in the treatment. After obtaining favorable results with antithyroid serum in 815 cases of hyperthyroidism in all forms, further analysis convinced him that the so-called neutralizing action of the serum from dethyroidized animals is limited to a psychotherapeutic effect. Exophthalmic goiter patients are generally extremely amenable to psychotherapy. He believes that most of the remedies for hyperthyroidism, perhaps even the physiotherapeutic and operative methods as well, owe some efficacy to psychotherapy.

Revue Médicale de la Suisse Romande, Geneva

44: 625-688 (Oct.) 1924

Struggle of the Organism Against the Tubercle Bacillus. H. Sahli.—p. 625.
*Intussusception. L. Boissonnas and C. Martin du Pan.—p. 646.
Vasomotor Reactions in Children. E. Thomas.—p. 665.
Auricular Flutter in Relation to Fibrillation. G. Turrettini.—p. 672.

A Study of Intussusception.—Boissonnas and du Pan give a full report on eleven cases of intestinal invagination in young children. While bloody stools, pain and vomiting in infants suggest a possible invagination, they believe these symptoms insufficient to establish the diagnosis, nor does their absence suffice to reject it, as shown by quoted cases.

Reduction of the invagination may be attempted by injection into the bowel, used with success in one case, or by manipulation through the rectum, successfully used in another case. If these methods fail, a laparotomy must follow immediately. If the invagination is not reduced, the prognosis is usually grave. Recovery is the rule with operation in the first twenty-four hours.

Schweizerische medizinische Wochenschrift, Basel

54: 1001-1024 (Oct. 30) 1924

*Galvanocautery for Pleural Adhesions. O. Weber.—p. 1001.
*Suffocation of Infant from Cyst. K. Leuw.—p. 1004.
*Tendovaginitis at the Styloid Process. A. Eschle.—p. 1006.
Calcification of Cartilage and Arteries. Huyssen.—p. 1010. Cont'd.
Tumor of Esophagus. A. Rosselet and E. Schinz.—p. 1015.

Galvanocautery for Pleural Adhesions.—Weber used in five patients Jacobæus' method of cutting pleural adhesions with a galvanocautery, under the guidance of a thoracoscope. He gives technical details, and advises caution because of the possibility of bleeding. The operation is followed frequently by serous pleurisy, less often by an empyema. In spite of this, he believes that the procedure is preferable to thoracoplasty, if there is reason to hope that a complete collapse of the lung could be obtained thereafter.

Suffocation of Infant from Cyst.—Leuw reports a case of suffocation in a nursling who had had a few preceding attacks of dyspnea. Necropsy revealed a cyst at the base of the tongue, which could press down the epiglottis.

Tendovaginitis at the Styloid Process.—Eschle has observed nineteen cases of de Quervain's affection of the tendon sheaths at the styloid process of the radius. This is a point where the tendons of the long abductor and short extensor of the thumb are exposed to friction and external injuries. The disease causes pains radiating toward the thumb and forearm. The great majority of the patients are women (112:12). The prognosis of operative treatment is good.

Riforma Medica, Naples

40: 1009-1032 (Oct. 27) 1924

Ambulatory Treatment of Varicose Ulcers. L. de Gaetano.—p. 1009.
*Intracranial Pressure and Rhinopharyngeal Affections. A. Bronzini.—p. 1011.
Chemistry of Tumor Autolysates. P. Caliceti.—p. 1014.
Amebic Colitis. I. Jacono.—p. 1017.

Intracranial Pressure and Rhinopharyngeal Affections.—Bronzini's patient had certain symptoms of increased intracranial pressure, especially headaches, slightly congested optic disk and restricted visual field. The young man recovered in a few days after removal of adenoids. A similar but graver case has been reported by Poppi.

Revista Médica del Uruguay, Montevideo

27: 289-344 (Aug.) 1924

*Malignant Syphilis. J. B. Morelli.—p. 289.
*Pulmonary Edema with Mitral Stenosis. Scremini and Montes Pareja.—p. 295.
Pleurisy with Friedlaender Bacillus. M. P. Abascal.—p. 304.
*Aneurysm of Pulmonary Artery. P. Hormaeche.—p. 316.
Tardy Inherited Syphilis of Liver. Bordoni Posse et al.—p. 328.
Dilatation of Pulmonary Artery. Butler and Estapé.—p. 333.
*Chronic Intermittent Purpura. Juan C. Plá.—p. 337.

Malignant Syphilis.—Two months after spirochetes had been found in a recent chancre, the young man developed fever, highest at night, and ulcerations followed in throat, skin, palate, nose and elbow, the aspect and symptoms those of severe sepsis, rebellious to all measures. The fever persisted for six months, nothwithstanding vigorous mercury and arsphenamin treatment. The right elbow is still stiff and there is a gap in the palate and nasal septum.

Acute Pulmonary Edema with Pure Mitral Stenosis.—During the intervals between the recurring attacks of acute edema of the lungs in the young woman, the heart rhythm was regular, but the signs of stenosis of the mitral valve were pronounced while the functioning of the auricles seemed normal. Scremini and Montes Pareja ascribe the pulmonary edema to sudden transient failure of the left auricle. Escuder Nuñez reported a similar case with a supplementary paroxysmal tachycardia, and a brother presented the same type of pure mitral stenosis.

Aneurysm of the Pulmonary Artery.—The serial roentgenograms taken at different intervals show the progressive course of the shadow which seems to be that of an aneurysm in the pulmonary artery in a man who had had two bad falls in horseback riding, the shoulder hitting the ground in both falls.

Cerebral Hemorrhage in Purpura.—Plá's patient was a woman, aged 27, who had been subject to manifestations of a hemorrhagic predisposition since childhood. Epistaxis and bleeding from the gums often preceded the menses. While in the hospital on account of severe hemorrhage from the uterus and gums, with purpuric patches, she had seven attacks of jacksonian epilepsy, but there were no pains in joints. The number of platelets was below normal and the coagulation time much prolonged. The hemorrhages occurred without external provocation or dietetic deficiency, the case being of the chronic intermittent type of purpura—Weil's chronic hemorrhagic dyscrasia of endothelium and plasma. Necropsy confirmed the hemorrhages in the brain and meninges, revealed by the convulsions and terminal coma. Plá queries whether splenectomy might not have saved the patient, referring to two recent cases in which a similar condition of chronic purpura without enlargement of the spleen seemed to be cured by removal of the spleen.

Archiv für Gynäkologie, Berlin

122: 497-828 (Oct. 13) 1924

Extended Vaginal Carcinoma Operation. I. Amreich.—p. 497.
*Coincidence of Uterus Tumors. O. Frankl.—p. 554.
Can Menstruation Occur Without Ovulation? R. Meyer.—p. 585.
*The Vagina in Labor. H. Runge.—p. 603.
*Venous Air Embolism. G. Haselhorst.—p. 632.
Vaginal and Lochial Flora. R. Apel.—p. 663.
Abnormal Vasoconstriction in Pregnancy and Eclampsia. P. Theodor.—p. 675.
Cancer Families. B. Samter.—p. 679.
*Puerperal Gas Bacillus Infection. W. Lehmann and E. Fraenkel.—p. 692
Histology of the Breast at Different Ages. E. Brack.—p. 711.
Heterotopic Proliferation of Epithelium in the Ovaries. K. v. Oettingen and H. Linden.—p. 718.
*Mucocellular Carcinoma of the Ovary. H. O. Neumann.—p. 739.
*A Thyroid-Tissue Tumor in the Ovary. F. Kovács.—p. 766.
*Cancerous Polypi and Polypous Carcinomas. H. Iseki.—p. 778.
Intravascular Hydatid Mole: Syncytioma Malignum. R. Meyer.—p. 795.
Ovarian Dermoid Tumors. G. Kaboth.—p. 803.

Relations Between Myomas and Sarcomas.—Frankl's investigations were made on operative material from 1,878 cases of myoma and 46 of sarcoma of the uterus (8 of these also showing carcinoma elements). The sarcoma had developed on the basis of a myoma in 22 of the cases. In his summaries of 38 sarcoma cases he gives special attention to the seat of origin. Sarcomas which developed without preceding myoma usually occurred in women having borne many children (four to twelve). There were 9 nulliparas, however, among the 38 sarcoma cases. There was metastasis in the lungs in 4 cases, and in the liver, kidney, stomach, peritoneum or vagina in a total of about a dozen cases. Serodiagnosis of sarcoma may yet be possible.

Plastic Stretching of the Vagina in Labor.—On the basis of necropsy findings and colloid chemical experiments, Runge distinguishes between a general change in the vagina through the pregnancy and an acute transformation in labor.

Venous Air Embolism.—Haselhorst describes his experiments on twenty-six dogs. The results proved that death from venous embolism is caused by a blocking of the pulmonary circulation, the heart insufficiency and deficit of blood in the important organs being only attending manifestations. To prevent danger of air embolism in obstetrical operations, he refrains from raising the pelvis, as this causes a negative pressure in the vascular system of the pelvis and favors the penetration of air into the vagina and uterus. He recommends the horizontal dorsal position in prophylaxis and treatment. If conditions allow puncture of the right ventricle immediately after entrance of air into the heart, it may be attempted, but this brings results only if at least 10-20 c.c. of air are removed.

Puerperal Gas Bacillus Infections from Clinical Standpoint.—The diagnosis of gas bacillus infection in febrile abortion cases is quickly made by finding gas bacilli in the cervix and

in the stained urine sediment. Infection limited to the endometrium offers a better prognosis, if the focus of infection is removed before further propagation. Two personal cases are summarized. Two other cases are reviewed, one illustrating the rapid progress of gas bacillus peritonitis, the other death from anuria, hitherto unknown in the literature of gas bacillus infection.

Ovarian Cancers.—Neumann presents evidence to prove that mucocellular cancer and even the Krukenberg tumor of the ovary are liable to be metastases from a remote primary malignant tumor.

A Thyroid-Tissue Tumor in the Ovary.—Kovács describes one of the rarest tumors of the ovary, goiter-like in nature. Symptoms of exophthalmic goiter had developed with the ovarian tumor, and subsided after its removal. The structure of the ovarian tumor was that of a colloid goiter, and it seemed not only morphologically and chemically but functionally true thyroid tissue.

Cancerous Polypi and Polypous Carcinomas.—Iseki investigated seventeen cases; most of the patients were between the ages of 50 and 60; the youngest was 36. Even if the base of the polyp is found free from carcinoma, the removal of the uterus is advised.

Archiv für klinische Chirurgie, Berlin

132: 1-190 (Oct. 15) 1924

*Origin of Gastric Ulcer. E. Stahnke.—p. 1.
Destruction of Cartilage by Cancer. C. Häbler.—p. 60.
*The Kidneys After Inhalation Anesthesia. E. Bernheim.—p. 69.
*Action of Cancer Serum on Tissue in Vitro. G. Körbler.—p. 75.
Resection of Anterior Pelvic Ring. P. Walzel.—p. 88.
*Cancer from Alien Embryonal Cells. G. Kelling.—p. 95.
Fracture of Upper Arm. R. Andler.—p. 125.
Removal of Mucosa in Excluded Intestinal Loop. Saposchkoff.—p. 143.
Hemorrhage Into Kidney Bed from Myolipoma. Hinz.—p. 149.
Operative Treatment of Tuberculous Spondylitis. Denk.—p. 156.
Aneurysm of Splenic Artery. C. Schroeder.—p. 175.
*Ion Treatment from Surgical Standpoint. Grusdew.—p. 181.

Neurogenous Gastric Ulcer.—Stahnke applied electric stimuli repeatedly to the vagus nerves by means of a special electrode-tipped sound introduced into the esophagus of dogs (10). Stimulation of the vagus in this way increased secretion of mucus and of pepsin and induced hyperemia in the stomach. It proved impossible to induce by this means spasm of the musculature with secondary ischemia, but prolonged irritation of the vagus finally entailed defects in the mucous membrane of the stomach. The research thus confirmed the possibility of hypersecretion and gastritis from purely nervous influences, explaining the origin of gastric ulcer in some cases, but not necessarily in all. Four pages of bibliography on the pathologic physiology of the stomach innervation are appended.

The Kidneys After General Anesthesia.—Bernheim used 15 gm. of chloroform and 80 gm. of ether in the eight cases described. Immediately before the surgeon took up the knife, an intravenous injection of a test substance alien to the organism was given. Nothing was observed which indicated injury of the kidneys by the anesthetic. The output of water and of sodium chlorid declined, but he ascribes this to extrarenal factors. These in turn were responsible for the delay in the elimination of the injected substance.

Cultivation of Cancer Tissue in Vitro.—Körbler describes a technic with which conditions can be varied serially by changing merely one factor. With this he demonstrated the profound differences in the entire organism between normal and cancer subjects.

Experimental Tumors.—Kelling reports further production of tumors by implanting embryonal cells from an alien species on a normal area where cells of the kind in question do not normally occur. There were five positive results among 250 mice inoculated with placenta from guinea-pig fetuses. Also in two of forty-six mice inoculated with a suspension of ground guinea-pig fetus ovaries and testicles of new-born mice. Other series of experiments have confirmed him in his belief that cancer in man is due to alien embryonal cells. Soft boiled eggs might explain the frequency of gastro-intestinal cancer, and the pronounced hemolysis against the blood of fowls which he has found in 90 per cent. of the cancer subjects tested. He regards embryonal gonad tissues as peculiarly adapted for cancer research as they possess the embryonal properties in concentrated form.

Ion Treatment as Aid to Surgery.—Grusdew states that he has treated over a thousand patients since 1907 with solutions of metals applied to the skin under the influence of the electric current. He summarizes a few cases to show the benefit in different conditions, such as iodin ions for arthritis, cicatricial changes in brain and elsewhere, affections of peripheral nerves, chronic leg ulcers, and to relieve pain deep in the tissues after operations. He has also used the salicylates, calcium and other ions in rheumatism, gout, gonorrhea, tuberculosis and neurasthenia and other medical affections.

Beiträge zur klinischen Chirurgie, Tübingen

132: 485-727, 1924

*Advanced Cancer of the Prostate. A. Läwen.—p. 485.
*Necrotic Process in Head of Femur After Trauma. W. Müller.—p. 490.
*Diagnosis and Treatment of Sciatica. O. Wiedhopf.—p. 523.
Experimental Arthritis Deformans. A. Schmidt.—p. 538.
Tumors of the Mesentery. H. Nossen.—p. 551.
Isolated Rupture of Pancreas from Contusion. Lehrnbecher.—p. 560.
Accessory Pancreas in Gallbladder Wall. N. v. Hedry.—p. 570.
Volatile Oils in Surgery. V. v. H. Csakanyi.—p. 573.
*Diagnosis and Pathology of Cholelithiasis. E. v. Landgraf.—p. 597.
Early Operation in Acute Cholecystitis. E. Hesse.—p. 607.
No Absorbent Dressings for Suppurating Wounds. Ssokoloff.—p. 614.
Modes of Access to the Internal Carotid. H. U. Kallius.—p. 620.
*Heredity of Muscular Torticollis. E. Konrad.—p. 628.
*Soot Carcinoma. H. Hauff.—p. 633.
Plastic Correction of Diastase Between the Recti. Bouvier.—p. 640.
Hernia in Rectovaginal Space. F. Kaspar.—p. 643.
Isolated Fracture of Transverse Process of Lumbar Vertebrae. W. Niedlich.—p. 655.
Rare and Benign Form of Bone Tuberculosis. H. Herfarth.—p. 667.
*Furuncles in the Face. R. Dittrich.—p. 671.
*Complications After Operations for Goiter. R. Pamperl.—p. 680.
*Segmentation of Rachitic Deformed Bones. C. Springer.—p. 696.
Tardy Disease of Hip Joint After Correction of Congenital Luxation. W. Jaroschy.—p. 701.
Foreign Body Peritonitis. K. Gütig.—p. 706.
Primary Carcinoma of Lung. A. Materna.—p. 708.
Classification and Treatment of Bladder Tumors. W. Hirt.—p. 716.
Congenital Diverticulum in Urethra, with Calculus. Neugebauer.—p. 719.

Advanced Cancer of the Prostate.—Läwen reports a case in which the entire rectum, seminal vesicles and part of the fundus of the bladder were removed with the cancerous prostate. The urine was regularly aspirated for a few months with a water-jet pump, but then was left to flow spontaneously through the urethra and the small perineal fistula. Systematic aspiration of the urine is a great help in operations on the prostate. Now, at the third month, the man is able to be up several hours a day.

Experimental Research on Separation of the Epiphysis of the Femur.—Müller's extensive research on dogs, cats, guinea-pigs and rabbits confirmed his clinical experience to the effect that a healthy femur may develop the typical picture of juvenile deforming osteochondritis of the hip joint after separation of the epiphysis from disturbance in the local circulation from some trauma or abnormal conditions in weight bearing after fracture. There is evidently no special clinical entity involved, but merely an association of certain pathologic processes. The questions still waiting for solution are why necrosis of the epiphysis develops in some cases and not in others, and why the epiphysis fractures so readily between the sixth and twelfth year, and the fracture heals so defectively.

Diagnosis and Treatment of Sciatica.—Wiedhopf concludes from his clinical observation and experiments on dogs that local hyperemia is an important element in the treatment of true sciatica, and that the various operative and injection procedures that have been found effectual owed their efficacy to the hyperemia which they had induced. The Stoffel operation and injection of alcohol or of osmic acid paralyze the nerves of the vessels, and this insures for a long time an increased supply of blood to the parts innervated by the sciatic. It is a simple matter to distinguish between sciatica of the nerve trunk and of the roots by blocking the nerve after it leaves the pelvis. When this is done, the Lasègue sign can no longer be elicited, if the neuralgia involves the nerve trunk alone.

Diagnosis and Prognosis of Gallstone Disturbances.—Landgraf applied the duodenal tube to patients two or three days after an attack of gallstone colic, before and after injection of a 10 per cent. solution of peptone, and compared the bilirubin content with that of the blood serum. He supplemented this research with study of the gastric chemistry after a test meal, and a day or two later applied the hemoclastic crisis test. Secretion in the stomach is practically always substandard in cholelithiasis; in some cases achylia seems to precede the gallstone disturbances. The hemoclastic crisis affords valuable information as to the functional capacity of the liver, and the peptone reflex throws light on conditions in the gallbladder. Microscopic and bacteriologic findings in the duodenal contents have no practical significance. The lack of normal gastric juice in cholelithiasis seems to allow infection to invade the biliary passages.

Heredity of Muscular Torticollis.—Konrad found among 100 persons with torticollis only two instances in which father and son were affected and one in which a brother and sister presented the anomaly. Abnormal narrowness of the uterus explains it better than the assumption of heredity.

Soot Cancer.—After a single prolonged exposure to the smoke of a fire which the man, aged 26, was fighting, there was no actual burn, but the side of the face where a sarcoma had been resected, two years before, developed carcinoma, recurring after repeated resection. Hauff thinks the case can be regarded as a soot cancer affecting a predisposed area.

Furuncles in the Face.—Dittrich stresses the importance of fever as a sign of a malignant tendency with furuncle of the face. The lesion was on the upper lip in nearly 50 per cent. of his 88 cases, and 10 per cent. in this lip group died. In the early, mild forms of furuncle of the lip, the main thing is to leave the lesion unmolested: at most, an alcohol cataplasm or boricated ointment or pure ichthyol, feeding fluids through a tube and forbidding the use of the voice; no compression, no early incision. In the graver forms, 5.9 per cent. died of the 61 per cent. of the total 88 cases treated by incision; none of the nonincised patients died. In the 40 upper lip furuncles, 13.6 per cent. died of the 22 patients in this group treated by incision, and 5.5 per cent. of the 18 not incised. A toothpick dipped in phenol and introduced, in the direction of the hairs, into the white center of the furuncle gave good results, as also electrocauterization with fine needles.

Complications of Operations on Goiters.—Pamperl reports two instances of air embolism, fatal in one case, and four of procain poisoning, with recovery, in the course of operations for goiter. He advocates drainage, citing a case in which the young man died from suffocation from hemorrhagic infiltration of the region.

Segmentation in Treatment of Rachitic Curvature.—Springer has corrected the deformity by cutting segments out of the bone and replacing them, inverted, in thirty-four cases; this brings to fifty the number on record. The limb is not only straightened but is lengthened.

Deutsches Archiv für klinische Medizin, Leipzig

145: 129-256 (Oct.) 1924

Auricular Wave in Esophageal Lead. L. Bauer.—p. 129.
*Cystin Metabolism in Children. G. O. E. Lignac.—p. 139.
Mushroom Poisoning. L. Welsmann.—p. 151.
*Chemistry of the Pancreas. Hoppe-Seyler et al.—p. 161.
Technic of Gas Metabolism Test. H. W. Knipping.—p. 179.
*Pharmacodynamics of the Stomach. Bársony and v. Friedrich.—p. 196.
*Research on the Blood Calcium. W. H. Jansen.—p. 209.
*Renal Action of Urea. E. Becher.—p. 222.
*Cholesterolemia in Scurvy. N. A. Ssokoloff.—p. 236.
*"Iodin Disease" or Thyrotoxicosis. Wallach.—p. 240.

Cystin Metabolism in Children.—Lignac observed deposits of cystin in the organs of two atrophic boys, aged 2 and 3. There had been no growth during the last months, but mentally they were well developed.

Chemistry of the Pancreas.—Hoppe-Seyler, Heesch and Waller determined the weight, protein, residual nitrogen, and fat of the human pancreas in nondiabetic affections.

Pharmacodynamics of the Stomach.—Bársony and Friedrich observed after intravenous injections of 1 mg. of atropin, frequently a marked depression of the acidity of the stomach.

Research on the Blood Calcium.—Jansen found after large doses of calcium (1-1.5 gm.) given by the mouth, a temporary increase in the blood calcium. This was more pronounced with calcium bicarbonate than with the chlorid. No change was observed after the lactate. The results of subcutaneous and intravenous injections were a little better, but also transient.

Renal Action of Urea.—Becher observed in the first phase of urea diuresis that the concentration of other urine constituents resembled that of the serum. The elimination of sodium chlorid is increased during the diuresis, but its concentration does not surpass that of the serum.

Cholesterolemia in Scurvy.—Ssokoloff found a lowered cholesterol content of the blood in scurvy.

"Iodin Disease" or Thyrotoxicosis.—Wallach reprints three cases published in 1845. They show the danger of sudden cure of goiter with iodids in elderly or middle-aged persons.

Deutsche medizinische Wochenschrift, Berlin

50: 1497-1528 (Oct. 31) 1924

*Lung Cancers in Leipzig. C. Seyfarth.—p. 1497.
Variability of Germs and Epidemiology. S. Zlatogoroff.—p. 1499.
*Removal of Arterial Embolus. Most.—p. 1501.
Pyonephrotic Kidney with Uremia and Calcium Gout. A. Funck and E. Homann.—p. 1504.
*Tubercle Bacilli in Bone Marrow. T. Koizumi.—p. 1506.
*Calcium to Combat Diarrhea. I. Boas.—p. 1507.
Nature of Hypnosis. Haupt.—p. 1510.
Bismuth Treatment of Syphilis. A. Alker and E. Waldmann.—p. 1510.
Plasma Proteins in Diseases. G. Leendertz—p. 1512.
Kidney Function After Arsphenamin and Mercuric Chlorid. E. Schmidt.—p. 1512.
*Yohimbin Poisoning. W. B. Meyer.—p. 1513.
Treatment of Traumatic Effusion in Joint. W. Blumenthal.—p. 1513.
*Palpation of Abdomen in Children. M. Loewy.—p. 1514.
*Birth Rate Statistics. E. Roesle.—p. 1514.

Lung Cancers in Leipzig.—Seyfarth has observed a comparatively high incidence of cancer of the lungs in Leipzig—similar to other towns in Saxony. Cancers of the lung occur in about 1 per cent. of the total cancer cases in other regions. In Leipzig they were found, between 1900 and 1923, in 5-11 per cent. and in 1924, so far, in 15 per cent. of the cases (a total of 307 lung cancers since 1900). Men are affected five times more frequently than women.

Removal of Arterial Embolus.—Most points out that surgical removal of an arterial embolus can be successful only if done within a few hours.

Tubercle Bacilli in Bone Marrow.—Koizumi found tubercle bacilli in persons who had died from tuberculosis (except miliary) in about 50 per cent. of the cases in the bile, and in 75 per cent. in the bone marrow. This confirms Löwenstein's old view on the agonal tuberculous sepsis.

Calcium to Combat Diarrhea.—Boas concludes from his thirty years of experience with calcium treatment of diarrhea, that it is superior to all other pharmacologic measures—especially tannin. He had no good results with soluble preparations, and prescribes calcium carbonate—preferably with equal parts of calcium phosphate—one teaspoonful three times daily. Gastrogenous diarrhea in achylia is well influenced. He also uses it in exophthalmic goiter, sprue, and gastro-enteritis of children. Pancreatogenic diarrhea requires addition of pancreatic ferments. The action is marked only in catarrhal affections. Ulcerative processes are not influenced. The difference is so pronounced that the success can serve for differential diagnosis. He emphasizes, however, that the appropriate diet is the foundation of all treatment.

Yohimbin Poisoning.—Meyer's patient took by mistake 1.8 gm. of yohimbin hydrochlorid—about 300 times the usual dose. A deep coma, with ophthalmoplegia, cyanosis, low blood pressure and edema of the lungs set in. Priapism was observed for a while. The patient regained consciousness after a few hours.

Palpation of Abdomen in Children.—Loewy puts one arm under the knees of the child, and raises the pelvis of the patient in this way above the level of the bed. The free hand palpates easily the abdominal organs.

Birth Rate Statistics.—Roesle's statistics show that Germany's birth rate is beginning to fall to the low level of other European countries.

Deutsche Zeitschrift für Chirurgie, Leipzig

187: 145-288 (Oct.) 1924

Experimental Research on Regeneration of Bone. Partsch.—p. 145.
*Active Immunization Against Sarcoma. V. E. Mertens.—p. 216.
Operative Treatment of Diaphragmatic Hernias. Makkas.—p. 246.
The Partial Waterbed for Local Irrigation of Skin. Beck.—p. 257.
*Myomas of the Stomach. E. Gmelin.—p. 270.
Congenital Hernia of the Lung. A. Dreifuss.—p. 274.
Rupture of Bowel Above Murphy Button Plugged by Fruit Stone. R. Mühsam.—p. 276.
Esophageal Diverticulum Close to Diaphragm. Kremer.—p. 278.
Supernumerary Bone on Heel Bone. Heimersheim.—p. 281.
Incarcerated Ventral Hernia of Large Intestine. H. Knote.—p. 284.

Active Immunization Against a Sarcoma.—Mertens gives a profusely illustrated description of his success in treating a white mare, 14 years old, with a large ulcerating melanoma between the tail and the anus. It partially subsided under the influence of phenol-treated cells from a metastatic tumor in the abdominal wall or from the primary melanoma. One part of the finely ground tumor cells was mixed with 9 parts of physiologic sodium chlorid solution, with addition of 1 c.c. of 5 per cent. phenol solution, and the vials were shaken by hand occasionally during the first days. The injection was made subcutaneously in the neck, the dose 20 c.c. each time, a total of 9 gm. of tumor tissue in thirty-three days. The extensive ulcerating surface of the primary melanoma healed over, the previously fetid odor disappearing permanently. Further injections were made to a total of 14 gm. of tumor substance in the fifty-nine days, the tumor subsiding in size. Two other courses of similar treatment were made, obtaining the material from the primary melanoma and the metastatic tumors. When the animal was slaughtered, melanin was found widely distributed through the organs, which he accepts as testifying to extensive destruction of the tumor cells. He regards it as most significant that under the influence of the injections there was no proliferation of the sarcoma when pieces were excised from it. Also that the phenol treatment did not apparently impair the immunizing properties of the cell suspension. But most important of all was the retrogression and greater movability of the parts of the tumor left, making them operable, especially as the general condition improved. White patches developed on the skin of the body, head and mouth as the tumor shrank in size. These effects were realized with a total of 44 gm. of tumor tissue, to a weight of 380,000 gm. This corresponds to 5.2 gm. of tumor tissue for a man weighing 60 kg. When the suspension was treated with heat (to kill streptococci casually present), in addition to the phenol, the effect was apparently less pronounced. The mare was under observation from July, 1922, until it was slaughtered, Dec. 5, 1923.

Gastric Myomas.—In Gmelin's two cases the myomas had entailed severe hemorrhages. In one case ulcer had been diagnosed and in the other, malignant disease. The patients were men, aged 32 and 63. Both were cured by resection of the myoma. The large size of the supposed cancer apparently contraindicated any attempt at surgical intervention, but resection restored full earning capacity.

Jahrbuch für Kinderheilkunde, Berlin

107: 129-190 (Oct.) 1924

Albumin Milk and Rennet. E. Stransky and L. Tavs.—p. 129.
Galvanic Skin Reflex in Young Children. A. Peiper.—p. 139.
*Resistance of Erythrocytes to Caproic Acid. H. Beumer.—p. 151.
*Coagulation in Hemophilia. H. Opitz and H. Zweig.—p. 155.

Resistance of Erythrocytes to Caproic Acid.—Beumer's research apparently proved that the erythrocytes of an infant are more resistant to caproic acid than the erythrocytes of a goat.

Coagulation in Hemophilia.—Opitz and Zweig's observation of three hemophilic children showed that the elements of hemophilic blood and those of normal blood act alike when added to normal blood. The addition of hemophilic elements to hemophilic blood, on the other hand, is followed by a notably less efficient action. The delayed coagulation in hemophilia is not produced by lack of thrombokinase or other substance, but by the presence of some factor which interferes to prevent the release of coagulation ferments. It is a constitutional more than a local phenomenon. The sex limitation suggests the action of some hormone. They noted that the erythrocytes in their hemophiliacs were exceptionally resistant, but they regard this as less essential for the hemophilia than the inadequacy of the factors for destruction of the erythrocytes. An abnormally high chlorin content of the blood, and lack of trypanocidal substance in the serum were noted in these hemophilic children and also in their mothers.

Klinische Wochenschrift, Berlin

3: 1985-2032 (Oct. 28) 1924

Intelligence Tests and Language. W. Eliasberg.—p. 1985.
*Insulin and Acidosis. S. J. Thannhauser and H. Mezger.—p. 1989.
*Haff Disease. G. Rosenow and L. Tietz.—p. 1991.
Oil of Chenopodium. W. Straub.—p. 1993.
*Bilirubin Resorption in Infants. P. Bohnen.—p. 1993.
*Protein Treatment of Diabetes. G. Singer.—p. 1995.
Blood Transfusion. A. Beck.—p. 1999.
*Malaria Treatment of Paralysis. Kirschner and van Loon.—p. 2001.
*Cholesterol Metabolism. J. Berberich.—p. 2003.
"Degeneration of Humanized Cowpox Lymph." Böing.—p. 2006.
Reply. H. A. Gins.—p. 2008.
"Rickettsia Research." H. Sikora.—p. 2008.
*"Hormone Action and p_H." H. Zondek and H. Ucko.—p. 2009.
Injury from Protein in Diabetes. R. Bálint.—p. 2009.
*Significance of Ketone Compounds. Harpuder and Erbsen.—p. 2010.
"Thyroid and Action of Iodids." Wadi and Loewe.—p. 2011.
Extirpation of Cervical Sympathetic in Asthma. A. v. Genersich.—p. 2011.
Subphrenic Abscess. F. Lotsch.—p. 2012.
Prevalence of Tuberculous Infection in Children. Loewy.—p. 2014.

Insulin and Acidosis.—Thannhauser and Mezger injected insulin in healthy subjects who were on a diet consisting chiefly of fat. The amount of acetone bodies in the blood and urine was lowered in two hours after the injection, and increased later.

Haff Disease.—Rosenow and Tietz discuss the epidemic of muscular rigidity reviewed in The Journal, November 29, p. 1804. They point to the methemoglobinuria and the presence of inclusions of hemoglobin clumps (Ehrlich-Heinz) in the erythrocytes. They conclude that the disease is due to a gaseous blood poison—perhaps arseniuretted hydrogen, or a similar compound.

Bilirubin Resorption in Infants.—Bohnen confirms the presence of considerable amounts of bilirubin in the cells of the lower part of the ileum in fetuses and new-born infants. He believes that the pigment is resorbed and reaches the circulation directly through the ductus venosus. It may account for the jaundice of the new-born.

Protein Treatment of Diabetes.—Singer reports on further good results of protein treatment of diabetes. He gives two injections daily or every other day, half an hour to an hour before the meals. The dose is small at first and may be increased. He claims an increase in tolerance in the majority of the patients, and fine results in gangrene. Casein injections inhibit epinephrin hyperglycemia in rabbits.

Malaria Treatment of General Paralysis.—Kirschner and van Loon observed in Java a threefold higher relative incidence of general paralysis in Europeans, compared with Asiatics. Tabes is one of the rarest diseases in Java and Indo-China. Many paralytics were absolutely immune against inoculation of malaria.

Cholesterol Metabolism.—Berberich found very low blood cholesterol figures in patients with otosclerosis. Similar figures were obtained by Fleischmann in ozena. In the latter disease, the nasal secretion contains cholesterol crystals. He points to a parallelism between the blood calcium, phosphates and cholesterol. Hypercholesterolemia is usually associated with deposits of anisotropic substance in the organs, rarely with a subnormal cholesterol content in the organs. Hypocholesterolemia may be also associated with local deposits of cholesterol.

Hormone Action and p_H.—Zondek and Ucko add to their paper abstracted in these columns, November 1, page 1465, the observation that a stronger alkalizing of the medium enhances the action of a thyroid extract, while a stronger acidity inhibits it. Thus the two optimums of its action are p_H 6.4-7 (acid) and 7.7-8.5 (alkaline). The important zone of inhibition is near the neutral point (7-7.7).

Significance of Ketone Compounds.—Harpuder and Erbsen studied the influence of beta-oxybutyric acid on various ferment actions. Almost every one of them—with the exception of trypsin—was inhibited.

Medizinische Klinik, Berlin

20: 1523-1558 (Nov. 2) 1924

Dietetics. J. Weiss.—p. 1523.
Gaucher's Splenomegaly. L. Pick.—p. 1526. Cont'n.
Growth of Bone. H. Maass.—p. 1532. Conc'n.
Bismuth Dermatitis. K. Boas.—p. 1533. Cont'd.
*Epileptic Seizures. G. Hermann.—p. 1536.
*Pernicious Anemia. F. Strieck.—p. 1538.
*Heart Function Test. F. Sobolowski.—p. 1540.
*Stomach Function After Protein Injection. H. Jacoby.—p. 1543.
*Disturbances of the Other Foot in Amputations. M. zur Verth.—p. 1544.
Obstetric Breviary. F. Eberhart.—p. 1546. Cont'n.
Recent Progress in Physical Therapy. A. Laqueur.—p. 1548. Conc'n.

Epileptic Seizures.—Hermann analyzes two borderline cases between epilepsy and hysteria. The first case is especially interesting because of the possibility to provoke the seizure from the extremity in which the aura was localized. Changes of the aura by psychic recollections were also noted.

Pernicious Anemia.—Strieck reviews the symptomatology of 165 cases of pernicious anemia. Glossodynia and paresthesia of the extremities were among the earliest signs. Achylia was almost constant, and diarrhea the rule. The disease was found much oftener in elderly people than had been anticipated.

Heart Function Test.—Sobolowski found Katzenstein's method reliable for determining the ability of the heart to stand general anesthesia. The patient has to lie down, and the physician compresses with the three middle fingers of each hand the femoral arteries directly at the inguinal ligament. The pulse is counted before and after complete compression for two minutes without releasing the pressure. If the second count is equal to or lower than the first, the heart energy is good. Increase up to six beats per minute indicates a weakened heart, but still capable of compensation. General anesthesia is contraindicated if the difference is eight beats or more. Determination of the blood pressure before and during the compression—originally required by Katzenstein—is not essential.

Stomach Function After Protein Injections.—Jacoby was unable to detect any influence from parenteral injections of proteins on the acidity of a healthy stomach.

Disturbances of the Other Foot in Amputations.—Verth publishes his expert testimony on the origin of pains in the previously healthy foot of a man whose other leg had been amputated. He incriminates the increased strain as the cause, and recommends a special shoe.

Münchener medizinische Wochenschrift, Munich

71: 1527-1560 (Oct. 31) 1924

*Gastric Atony from Tuberculosis of the Hilum. Leb.—p. 1527.
*The Thymic Constitution. H. Schridde.—p. 1533.
Diagnosis of Cancer. R. Wigand.—p. 1534.
Means to Increase Lymphocytosis. A. Theilhaber.—p. 1537.
*Sensitivity of the Sympathetic to Anesthetics. O. Wiedhopf.—p. 1537.
Prevention of Goiter. Bleyer.—p. 1538.
"Tuberculin by Mouth." W. Fornet.—p. 1539.
Determination of Basal Metabolism. H. W. Knipping.—p. 1539.
Roentgenography of the Duodenum. Hänssler.—p. 1539.
Therapeutic Heating Apparatus. H. Krebs.—p. 1540.
Syphilis of Third Generation. H. Czickeli.—p. 1541.
Gangrene of Appendix in Left Hernia. L. Reichenbach.—p. 1542.
Diabetes Mellitus. F. Umber.—p. 1544.
Insurance Against Damage Suits. L. Hoeflmayr.—p. 1546.

Gastric Atony from Tuberculosis of Hilum.—Leb has observed 316 cases of atony of the stomach with probably tuberculous changes in the hilum of the lungs. The motor changes resembled those which occur in animals after lesions of the vagus and predominance of the sympathetic. Lack of appetite, constipation, gas, sensation of fullness, pains, and loss in weight are common. In the first stage the stomach sags only when filled, and peristalsis is very pronounced. The dilatation becomes permanent in the second stage, and general cachexia is characteristic of the third phase.

The Thymic Constitution.—Schridde has encountered since 1914 five new cases of hyperplasia of the medulla of the thymus in new-born boys. The infants were fat and excessively large (one of them measured 61 cm.). He emphasizes the significance of the hyperplasia of the thymus medulla. The combination of the swelling of the follicles of the spleen and of the intestines, the abnormal height, and the abundance of fat occurs only with this form of thymus hyperplasia.

Sensitivity of the Sympathetic to Anesthetics.—Wiedhopf found that sympathetic nerve fibers are more susceptible to procain than the sensory spinal fibers, and the latter more than the motor.

Wiener klinische Wochenschrift, Vienna

37: 1131-1156 (Oct. 30) 1924

*Sepsis. L. Schönbauer.—p. 1131.
The Motor and Secretory Functions of the Stomach. L. Hess and J. Faltitschek.—p. 1132.
Air Embolism in the Brain. A. V. Frisch.—p. 1135.
Liver Function and Pernicious Anemia. G. Heténvi.—p. 1138.
*Preservation of Malaria Blood. L. Horn and O. Kauders.—p. 1140.
Against Andreatti's Method. H. Poindecker.—p. 1143.
Intestinal Spasms. H. Steindl. Supplement.—pp. 1-16.

Sepsis.—Schönbauer determined the lethal dose of streptococci injected subcutaneously in dogs. If the same dose was divided into thirty parts, and injected under the skin at different points, the dogs survived, and their blood protected other animals against the lethal dose. The injections of own blood in patients with grave sepsis all failed, with the exception of one case.

Preservation of Malaria Blood.—Horn and Kauders preserve defibrinated blood for malaria inoculation in the icebox on blood agar. The inoculations were successful with it even after seventy-four hours. If the serum becomes cloudy, the material should not be used.

Zentralblatt für Gynäkologie, Leipzig

48: 2449-2512 (Nov. 8) 1924

Endometrial Adenomyosis and Aberrant Cells. Meyer and Kitai.—p. 2449.
Fibroadenomatosis in Rectovaginal Septum. A. Lauche.—p. 2460.
*The Ovaries with Chorio-Epithelioma and Mole. Wiczynski.—p. 2463.
"Induced Abortion." W. Wiegels.—p. 2465.
Induced Abortion Legalized in Russia. Niedermeyer.—p. 2467.
Favorable Conditions in Cephalic Presentation. A. Springer.—p. 2471.
Coitus After Fifth Month a Frequent Cause of Puerperal Fever. H. Heusler-Edenhuizen.—p. 2472.
*Phlorhizin Test for Pregnancy. X. Bronnicoff.—p. 2474.
*Manual Extraction of Placenta. L. Sacharow.—p. 2480.

Relations Between Changes in the Ovaries and Chorio-Epithelioma.—Wiczynski's findings confirm the opinion that the changes occurring in the corpus luteum in the early stage of hydatidiform mole and of chorio-epithelioma are of secondary nature. The proliferation of luteum cells resembles atretic follicles with a hypertrophied theca. Cystic changes appear afterward, and are due in his opinion to passive hyperemia, from infiltration of the parametrium. The maternal organism responds to the increased amount of villi in the blood by an excessive proliferation of cells and production of lipoids, which are firmly bound to proteins. The pregnancy toxicosis in these cases may thus be interpreted as an inadequate defense of the organism against the toxins generated by the placental villi in excessive amounts with hydatidiform mole and chorio-epithelioma.

Phlorhizin Test and Pregnancy.—Bronnicoff's 1,000 phlorhizin tests in 300 women and fifty men proved that the reaction is not specific for pregnancy. A positive reaction was obtained in 72 per cent. of the men, and in many nonpregnant women, and the reaction veered from positive to negative or vice versa at times with the menses.

Influence of Manual Extraction of Placenta on Postpartum Period.—Sacharow believes that manual extraction of the placenta is not always harmful. Complications may be more frequent with such extraction, but the mortality is no higher after it. The intervention should not be delayed in cases of hemorrhage, as profuse bleeding lowers the resistance of the organism to infection. The one fatal issue in his ninety-nine cases should be ascribed to the preceding hemorrhage, rather than to the manual extraction. The latter is indicated only when other methods have failed.

Casopis lekaruv ceskych, Prague

63: 1585-1620 (Nov. 1) 1924

*Leiomyoma of the Cecum. J. Podlaha.—p. 1585.
*The Hemoclastic Crisis. G. Altschuller.—p. 1590.
Abnormalities of the Cecum. A. Vána.—p. 1596.
Gastrocolonic Fistula After Gastro-Enterostomy. V. Ulrich.—p. 1599.
Prevention of Measles. O. Srámek.—p. 1601.

Leiomyoma of the Cecum.—Podlaha reports the history of a case of a large leiomyoma of the posterior wall of the cecum. The tumor accounted for an ulcer in the cecum and repeated hemorrhages. The contrast meal stayed over twenty-four hours in the cecum, and moved passively with the tumor. When the colon was filled with fluid, the tumor showed the characteristic ballotement.

The Hemoclastic Crisis.—Altschuller believes that a true hemoclastic crisis may be differentiated from alimentary vagotonic leukopenia by a relative decrease in the number of segments of polymorphonuclears.

Acta Scholae Medicinalis Univ., Kioto

6: 143-273 (Dec. 10) 1923. English-German Edition

Histologic Investigation in Two Cases of Trachoma. R. Miyake.—p. 143.
Study of Infusion of Ringer-Locke Solution. T. Tsurumaki.—p. 151.
Pelvic Organs of the Japanese. N. Ishikawa.—p. 169.
Research on Loewe Heart Strips. S. Uéda.—p. 193.
*Action of Heat on the Testicles. N. Fukui.—p. 225.
Influence of Heat on Drug Action. S. Inouye.—p. 261.

Action of Heat on the Testicles.—Fukui found that the testicles of rabbits, to which heat had been applied, underwent certain characteristic regressive changes. Extensive histologic and endocrinologic studies were then carried on, mainly on rabbits but also on other mammals and in one man. Fukui determined the minimum time for producing "heat testicle" at temperatures from 40 C. to 49 C. At 45 C., all the reproductive cells and spermatogonia became necrotic; the spermatozoa were most resistant. The changes observed on heating to between 40 C. and 44 C. are most instructive from the standpoint of practical hygiene. In this type, destruction of the reproductive cells was incomplete, and some spermatogonia survived. Above this, all the reproductive cells and most of the Sertoli cells were destroyed. Five heat sources were used. Ultraviolet rays are incapable of acting on the testicles from the surface of the scrotum. Fukui's observations indicate that the persistence of the sexual appetite depends on the survival of some reproductive cells or on the retention of spermatogenous substance, and has no connection with the Leydig cells or Sertoli cells.

Mitteil a. d. med. Fak. Univ., Tokio

32: 1-195 (Oct. 10) 1924. French-German Edition

Nephritis Acidosis in Relation to the Phosphorus and Urea Content of Blood. T. Hayashi.—p. 1.
*Epinephrin in Tests of Spleen Function. C. Aibara.—p. 41.
Threshold of Sugar Output in Diabetics. Sakaguchi et al.—p. 61.
*Variations in Glycosuria Threshold. Sakaguchi et al.—p. 85.
Pharmacologic Study of Cobalt. S. Yosida.—p. 103.

Epinephrin in Functional Tests of the Spleen.—To determine the effect of epinephrin, subcutaneously injected, on the peripheral blood, Aibara conducted investigations on rabbits, normal human subjects and those with diseased spleen and after removal of the spleen. Pronounced leukocytosis occurred in the rabbits three or four hours after the injection of epinephrin; lymphocytosis did not appear. In all the human subjects, lymphocytosis occurred forty-five minutes after the injection. Aibara therefore does not agree with Frey that the lymphocytosis after subcutaneous injection of epinephrin can be used in functional tests of the spleen.

Variations in the Threshold of Sugar Output.—Sakaguchi, Gyotoku and Matsuyama investigated the threshold of sugar elimination in a number of cases of diabetes and renal glycosuria, and in nondiabetics, and tabulate the significant results. They found that the threshold, if determined under similar conditions, usually remains almost unchanged. In treatment of the diabetic, an unmistakable lowering of the threshold is often observed on improvement. If a diet exceeding the tolerance of the diabetic is given, the sugar is usually eliminated in the first or second hour after the meal. They conclude that it is generally possible approximately to determine the degree of hyperglycemia from the degree of glycosuria, if the two are occasionally compared. Thus, regulation of the diet of the diabetic from the urine findings, with occasional control by examination of the blood sugar, usually proves satisfactory.

Hospitalstidende, Copenhagen

67: 385-400, 1924

*Roentgen and Finsen Arc Light Treatment of Tuberculous Glands. Axel Reyn.—p. 385. Conc'n, p. 401.
*Subconjunctival Injection of Epinephrin in Glaucoma. Lundsgaard.—p. 395.

Roentgen Ray and Arc Light Treatment of Lupus and Tuberculous Glands.—Reyn's experiences were summarized in these columns recently, October 25, p. 1375.

Epinephrin in Treatment of Acute Glaucoma.—Lundsgaard theorizes to explain the cases reported by Fromaget and Hamburger in which they succeeded in arresting acute glaucoma by subconjunctival injection of epinephrin in a weak solution of procain. There seems to be no doubt that epinephrin reduces the tension in the eye, and this throws light on the pathogenesis, to some extent.

86: 417-432, 1924

Hemeralopia and Other Ocular Complications of Chronic Alcoholism. K. K. K. Lundsgaard.—p. 417.

86: 433-448, 1924

*Autogenous Vaccine in Cancer of the Throat. R. Lund.—p. 433.
Acute Primary Inflammation of Cecum. O. Mikkelsen.—p. 442. Conc'n, p. 449.

86: 449-480, 1924

Diagnosis of Diaphragmatic Eventration and Hernia. Ottosen.—p. 465.

86: 481-496, 1924

Unequal Participation of Twins in Congenital Syphilis. Haslund.—p. 481.
Prevention of Blindness in Children. G. Norrie.—p. 490. Conc'n, p. 497.

Autogenous Vaccine in Treatment of Cancer of the Throat.—Lund applied Citelli's method in treatment of three inoperable cancers of the throat, encouraged by the success reported by Citelli and others in twenty of the forty-three cases thus treated. In all of Lund's three cases the effect was unmistakable. The carcinomas softened, with partial demarcation of the necrosis, and final expulsion of masses of the tumor, which sloughed off in necrotic lumps. None of the patients were cured, but the improvement in every way justifies further trials of the method in inoperable cases.

Ugeskrift for Læger, Copenhagen

86: 561-576 (July 24) 1924

*The Anoxemia of Pneumonia. C. Lundsgaard.—p. 561.
Bismuth Emulsion for Intramuscular Injection in Syphilis. Lomholt.—p. 569.

Anoxemia in Pneumonia.—Lundsgaard quotes that the physiology of today is the medicine of tomorrow, and states that this applies especially to treatment of pneumonia. The deficient aeration of the blood from the impeding influence of the local process in the lung differs from the anoxemia in uremia in that it is curable. In both conditions there is profound functional disturbance, but it is irreparable in uremia, while in pneumonia we can often correct the condition by applying at once and vigorously all our therapeutic measures. The tendency to local cyanosis suggests that anoxemia is possibly responsible for that and for the cerebral disturbances, signs of abnormal function of the centers in the medulla oblongata, and the decline in muscular energy, especially of the heart muscle. In about 60 per cent. of the forty cases he has compiled in which pneumonia was systematically treated with inhalation of oxygen, the oxygen content of the blood was brought up to normal, confirming that the dyspnea was traceable to the hampering of function by the local process in the lung.

86: 577-590 (July 31) 1924

*Anaphylactic Asthma. K. Baagøe.—p. 577.
Apparatus for Sterilizing Rubber Articles and Instruments with Heated Formaldehyd Fumes. V. Albeck.—p. 582.
Importance of Pigment Production in Light Therapy. H. Jansen.—p. 584.

Anaphylactic Asthma.—Baagøe presents evidence to prove that the substances which induce anaphylaxis in the susceptible are soluble in water and possess the property of inducing hyperemia and edema in the skin and mucous membranes of the susceptible. On subcutaneous injection, they can induce urticaria and an anaphylactic attack, and guinea-pigs can be sensitized with them. The essential element in the clinical picture is a peripheral vasomotor disturbance induced by the hyperemia-producing and edema-producing properties of the antigen. Reflex and cerebral factors are not required for production of the attack.